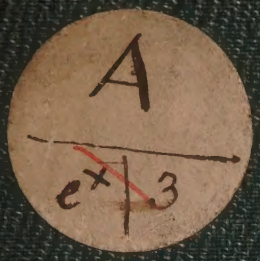
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OBSERVATIONS

ON

CRURAL HERNIA:

TO WHICH IS PREFIXED,

A GENERAL ACCOUNT

OF THE OTHER

VARIETIES OF HERNIA:

ILLUSTRATED BY ENGRAVINGS.

BY

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TO

DR JAMES CARMICHAEL SMYTH,

PHYSICIAN EXTRAORDINARY TO THE KING,

AND TO

DR RUTHERFORD,

PROFESSOR OF BOTANY IN THE UNIVERSITY

OF EDINBURGH,

THE FOLLOWING PAGES ARE INSCRIBED,

AS A TESTIMONY OF THE REGARD

AND ESTEEM OF

THE AUTHOR.

ADVERTISEMENT.

Since these Observations were read to the Royal Society of Edinburgh, Mr Hey of Leeds, a gentleman of great experience and eminence in his profession, has published various excellent Observations on Crural Hernia, from which the Author has made Extracts, in order to render his History of Crural Hernia more perfect.

With the same view, an Extract from Dr Monro's Treatise on the Bursae Mucosae is also annexed, in the form of an Appendix.

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GENERAL OBSERVATIONS

ON

HERNIA*.

THE frequency of hernia, the occaſional obſcurity of its commencement, together with its fatal conſequences, give this diſeaſe a ſtrong claim to the attention of all who practiſe the healing art.

No rank nor condition of life gives perfect ſecurity from the attacks of this diſeaſe. The old and the young, the laborious and the idle, the corpulent and the lean, the rich and the poor, are ſubject to it.

* The following obſervations on the different ſpecies of hernia were read before the Royal Society of Edinburgh, April 19. 1802.

But though all are liable to this diſeaſe, they are not equally ſo; the difference of age, ſex, habit of body, and condition of life, not only give a greater or a leſs diſpoſition to hernia in general, but have an influence in occaſioning the particular ſpecies of the diſeaſe.

Amongſt the various ranks of ſociety, the lower claſſes, owing to their continued labour, are moſt ſubject to hernia: and the diſeaſe proves more certainly fatal to this deſcription of people, as labour not only induces the complaint, but tends to increaſe it when formed, and poverty too often prevents their obtaining the only means capable of arreſting its progreſs.

The frequent occurrence of the diſeaſe, and the number of uſeful perſons diſabled, or loſt to the community, gave riſe to a charitable inſtitution in London; the object of which is, to afford relief to the ruptured poor.

The records of this ſociety afford, to a certain degree, the means of making an eſtimate of the proportion of perſons afflicted with hernia.

Mr Turnbull, ſurgeon to that inſtitution, ſtates

ſtates the average as 1 to 15. "Few men (he "obſerves) have taken more pains to aſcertain "this peculiar point than myſelf; and, after the "moſt diligent and general inquiries through-"out the kingdom, I am induced to take them, "male and female, and of all ages, upon an "average of 1 to 15." This proportion may be thought by ſome too high; but we find the truth of it ſupported by the concurring teſtimonies of foreign authors *.

As no full and accurate treatiſe has, as far as I know, been profeſſedly written on crural hernia, I have directed my attention chiefly to that ſpecies of the diſorder.

On account of the intimate relation which ſubſiſts between a minute knowledge of anatomy, and the pathological hiſtory of crural hernia, an anatomical deſcription of the parts concerned in this diſeaſe, in both ſexes, ſeems to be a neceſſary introduction to the ſubſequent hiſ-

* Gimbernat and Arnaud.

tory of the complaint, as it will tend to point out not only the ſituation of the tumour, the effects of the protruſion on the crural arch, and the cauſe of the greater frequency of this complaint in the female, but alſo ſuggeſts the ſafeſt and ſureſt method of removing the diſeaſe by preſſure, or by a chirurgical operation, and alſo the means of preventing a return of it.

I was naturally led to this inquiry, from ſome opportunities, that have occurred to me, of examining the nature of this complaint in the recent ſubject, and from having the advantage of ſeveral preparations in my father's muſeum, illuſtrative of this kind of hernia: and alſo from my being able to ſubjoin ſome accurate drawings made, at my requeſt, by that able draughtſman and anatomiſt, Mr Fyfe.

But, before entering upon the immediate object of my inquiry, it may not be improper to premiſe a ſhort account of hernia in general; as, by comparing the various forms of this diſeaſe, the peculiarities of crural hernia will be more obvious.

OF THE NATURE AND VARIOUS FORMS OF HERNIA.

By the word Hernia is generally underſtood, in the language of ſurgery, an external tumour, formed by a protruſion of the bowels through one or other of the openings through the abdominal muſcles, where the umbilical, ſpermatic, or crural * veſſels paſs out, or round ligament of the female uterus.

The ſac of the tumour is formed by the peritoneum, and, within it, are contained an aqueous fluid, the omentum, a portion of the alimentary canal, or other viſcera of the abdomen.

Different names have been applied to the various ſpecies of hernia, deſcriptive of the age of the ſubject afflicted by the diſeaſe, or of the ſituation of the tumour: hence the term her-

* The term *crural* is meant to include the femoral, ſciatic, and obturator blood-veſſels, as all of theſe are ſpent on the upper part of the thigh.

nia congenita, as it appears at or ſoon after birth.

Exomphalos, or umbilical hernia.

Bubonocele, or inguinal hernia.

Hernia Scrotalis.

Merocele, or crural hernia.

Iſchiatocele, where bowels protrude through the iſchiatic notch of the os innominatum.

Ovularis obturatoria, where bowels protrude through the oval aperture in the ligamentum thyroideum, along with the obturator blood-veſſels.

Hernia perinei, where tumour appears at the perineum.

Another diſtinction of herniae is mentioned by ſurgical authors, ariſing from the different contents of the hernial tumour.

Enterocele, where the inteſtines are protruded.

Epiplocele, where the omentum is protruded.

Entero-epiplocele, where the omentum and a portion of the inteſtine, are contained within the ſame tumour.

Cyſtocele,

Cyſtocele, where the bladder of urine is protruded.

Hyſterocele, where the uterus is protruded.

Hepatocele, where the liver is protruded.

And, Splenocele, where the ſpleen is protruded.

Beſides the above ſpecies of herniae, where the bowels are protruded through what are called natural openings in the abdominal muſcles, there are other examples of herniae, in which the bowels have been forced through ſome other of the parietes of the abdomen, which have been called Ventral Herniae.

Ventral herniae are generally ſituated in the middle, or at the ſide of the linea alba, or linea ſemilunaris. The tumour is of various ſizes: in ſome inſtances, it is very large, and contains within it a portion of the ſtomach. In other inſtances, there are two or more ſmall tumours at the ſide of the linea alba, or ſemilunaris, which diſappear on preſſure, as the diameter of the baſe of the tumour is equal to that of any other part of it.

Sabatier deſcribes another very rare ventral hernia in theſe words: " Quequefois auſſi elles " (boyeaux) ſe diſplacent par un ecartement des " fibres de ce muſcle pres l' anneau."

Another extraordinary form of ventral hernia, and which may be looked upon as a luſus naturae, occurred to my father. He was conſulted, along with Dr Farquharſon, reſpecting the nature of two tumours, which were covered by the ſkin alone, on each ſide of the back of a child, ſix months old, immediately under the falſe ribs.

Each tumour, upon an accurate examination, was found to contain a kidney, which could readily be reduced through an oval ring, of a conſiderable ſize.

OF INTERNAL PROTRUSIONS OF THE BOWELS, IMPROPERLY CALLED HERNIAE.

Besides the external protruſions of the bowels, which conſtitute the different forms of herniae,

above

above enumerated, there are alſo inſtances of internal protruſions, which, though not coming under the general definition of hernia, yet, from their analogy to this diſeaſe, deſerve to be taken notice of, when treating of this ſubject.

A part of the inteſtine, generally a part of the great arch of the colon, has been obſerved to paſs through an aperture in the diaphragm.

This unnatural appearance was probably the conſequence of original malconformation, as the ſides of the aperture were found perfectly ſmooth, which could not have been the caſe, had it been the conſequence of rupture, from violent muſcular exertion. Such apertures have been diſcovered in perſons of different ages, who generally died in conſequence of ſtrangulation of that part of the colon, which paſſed through the diaphragm, or in conſequence of the diſplaced bowel impeding the free action of the heart and lungs.

Such a luſus naturæ in the diaphragm was ſent to my father, by Dr Paterſon, with a letter (dated

(dated Ayr, 1793,) giving the ſubſequent hiſtory of the caſe.

A young woman, of 22 years of age, had been occaſionally ſubject, during the greater part of her life, to pain in the left ſide, under the falſe ribs. This was generally ſucceeded by pains throughout the whole belly, reſembling colick pains; and was attended with ſome degree of coſtiveneſs. Theſe complaints commonly wore off in a few days, and ſhe was moſt ſubject to them at the period of menſtruation. Having danced violently on a Saturday evening, ſhe was ſeized on the Sunday morning, in the manner above deſcribed. In the afternoon, ſhe was ſeized with a violent vomiting, and with excruciating pains in the ſide, and belly, which laſted during the whole night. An injection was given about 10 o'clock, which procured a conſiderable diſcharge of faeces, but without any relief. She continued drinking large quantities of water-gruel, and throwing it up almoſt immediately, till about 10 o'clock next forenoon, when ſhe expired.

She

She was never obſerved to have any ſhortneſs or difficulty in breathing, and lay alike well on both ſides. The body was opened the following morning, and, although only 22 hours after death, it was unuſually putrid. The bowels were much diſtended with air, and the drink ſhe had ſwallowed, was effuſed into the cavity of the abdomen. This I found to ariſe from an opening through the coats of the ſtomach, nearly in the middle of its great curvature. On examining the inteſtines, I found that a large portion of the colon had paſſed through an opening in the middle of the left ſide of the diaphragm, into the cavity of the thorax; and lay behind the heart and lungs.

This tumour exceeded the ſize of a perſon's fiſt, and appeared to be ſtrangulated, for all the blood-veſſels were turgid, as if they had been injected, and the gut was with difficulty drawn back into the cavity of the abdomen. On examining the opening through the diaphragm, I found it ſurrounded by a callous ring, and to have every appearance of having been of long

ſtanding,

ſtanding, or more probably an original defect. A thin pellucid membrane was connected with part of the edge of the ring, and a ſort of proceſs from this membrane, extended along the tumour into the cavity of the thorax.

From the ſymptoms which preceded the death of this woman, and from the hiſtory of the appearances diſcovered upon diſſection, it appears to me, that the violent exerciſe ſhe had taken, forced, through the praeternatural aperture in the diaphragm, more of the colon, which brought on ſtrangulation.

The aperture is of an oval ſhape, and, though conſiderably ſhrunk, from having been dried, ſtill meaſures two inches and a half in length, and one inch and a half in breadth.

A ſingular inſtance of internal protruſion, undeſcribed by any author, occurred to my very learned colleague, Dr Rutherford. In this inſtance, there is a praeternatural aperture in the meſentery, through which a portion of the ileum had protruded, and was ſtrangulated; the bowels being twiſted in a very extraordi-

nary

nary manner *. The patient, a female, died in conſequence of inflammation in her bowels. The portion of the ileum, which paſſed through the meſentery, was found ſtrangulated †.

Another variety of internal hernia is produced, in conſequence of the villous and cellular coats of the inteſtines being forced through the muſcular coats, in the ſame manner as pouches are formed in the bladder of urine. In my father's muſeum, there are two examples of blind ſacs communicating with the ileum, and which were probably formed in that manner.

There is ſtill another variety of internal hernia, which is produced by a turn of inteſtine paſſing around another portion, and compreſſing it ſo much, as to bring on ſtrangulation.

It has been obſerved, that inteſtinula caeca ſometimes grow out from the inteſtines. In a remarkable caſe ‡, one of theſe paſſed around a portion

* Vid. Tab. 1. Fig. 1.

† Since the above was written, I found an inſtance of hernia through the meſocolon, deſcribed in the Act. Nat. Cur.

‡ Vid. Plate 7th.

portion of the ſmall inteſtines, and its end was fixed down by a ligament. It ſo greatly compreſſed the portion of inteſtine, around which it paſſed, as to bring on inflammation and mortification.

HERNIA ACUTE OR CHRONIC.

Besides the diſtinction of hernia above ſtated, there is another, perhaps ſtill more eſſential, and equally obvious. I mean the diſtinction of hernia as an acute or chronic diſeaſe.

In the former, the diſeaſe comes on rapidly, is the immediate reſult of violent muſcular exertion; in many inſtances creates a very great degree of pain, and, if means are not taken to avert its progreſs, ſoon proves fatal, from the ſtrangulation and inflammation of the bowels.

In the latter, the bowels are gradually protruded, without any known previous accident, are eaſily returned, and remain down without ſtrangulation; and the patient may enjoy a tolerable ſhare of health, by due attention to diet,

and

and the ſtate of his body. And there are inſtances of perſons, who, though ſubject to hernia, during the whole of a long life, have not ſuffered any great degree of inconvenience from it. This may be accounted for from their relaxed habit of body, and the increaſed ſize of the ring, which allows the bowels to paſs and repaſs freely through it.

But the diſeaſe, even in ſuch habits of body, and under ſuch circumſtances, is not entirely free from riſk; ſtrangulation being ſometime induced, from violent exerciſe, from the actions of coughing, vomiting, or ſneezing, or from indigeſtion, producing an extraordinary quantity of air within the alimentary canal.

In the acute ſpecies of hernia, the ſtricture of the ring on the protruded bowels ſeems to be the principal obſtacle to the reduction of the tumour; whereas, in the chronic hernia, the thickening of the neck of the ſac, which is, in many caſes, produced by the pad of the truſs being injudiciouſly applied, and the praeternatural adheſion of ſome portion of the contents of the

ſac

ſac to the ſac; or, what happens very rarely, a contraction in ſome part of the ſac, render it very difficult, nay impoſſible, to remove the tumour.

OF THE CONTENTS OF THE HERNIARY SAC.

From the definition we have given of hernia, it is evident that a portion of the moveable bowels generally conſtitutes the eſſential part of the tumour; and the ſmaller inteſtines, having the longeſt meſentery, conſequently the moſt moveable part, are moſt frequently found within the tumour.

Where a part of the arch of the colon is included in a herniary ſac, it carries along with it a part of the omentum. But any other looſe part of the inteſtinal canal, may carry with, or puſh before it, a part of the omentum, as this is unattached at its lower extremity.

Herniae, therefore, are commonly found to contain, not only a portion of the alimentary canal, but alſo of the omentum; more eſpecially

cially in fat or in elderly people: and ſometimes the omentum, by adhering to the herniary ſac, divides it into two diſtinct cavities.

In the ventral hernia, even a portion of the ſtomach may be protruded; in which caſe, the ſize of the tumour increaſes in a remarkable manner, immediately after taking any kind of drink or nouriſhment.

It may be worth while to make mention of a variety of the contents of a herniary ſac, which ſometimes, though very rarely, occurs. The hiſtory of ſuch a caſe was communicated by Dr Wardrop to my father, who, after opening the herniary ſac of a bubonocele, found that a portion of inteſtine was much diſtended by air, and could not be returned into the cavity of the abdomen.

Upon an accurate examination of this portion of inteſtine, it was found that there was no communication betwixt it, and the reſt of the alimentary canal. It ſeems probable that, in this inſtance, the preſſure of the ring of the abdominal muſcles was ſo great, as to produce in-

 flammation,

flammation, and adhefion of the oppofite fides of that portion of inteftine.

He, therefore, cut off this portion of inteftine; and no bad confequence followed.

Hence this was undoubtedly an inftance of a lufus naturae (which is not very unfrequent, as five or fix examples of it are preferved in my father's mufeum), in which a cul de fac grows out from the inteftine.

Befides a portion of alimentary canal and omentum, herniary tumours are, on many occafions, found to contain a fmall quantity of a ferous or watery fluid, which is probably effufed in confequence of the ftricture of the ring compreffing the veins which pafs upwards from the protruded portion of inteftine, by which there is a greater pufh againft the exhalant veffels, and a greater fecretion of this liquor than ufual.

The nature and confiftence of this liquor is found to vary, according to the preceding ftate of the bowels within the herniary fac.

The fize of the tumour is alfo occafionally increafed or diminifhed, from a portion of air contained

tained within the protruded inteſtine; a circumſtance which is moſt obſervable in herniae of a large ſize, and of long ſtanding.

OF THE EFFECTS OF HERNIA UPON THE BOWELS.

In every inſtance of hernia, where the bowels cannot be returned into the cavity of the abdomen, one or other of the following conſequences may be expected.

In the acute ſpecies, or where the protruſion of the bowels is ſudden, and accompanied by a conſiderable degree of pain; ſtrangulation, ileus, and death, are the uſual conſequences.

But where the ſtrangulation is not complete, where the inflammation, leſs violent, does not immediately terminate in ileus and death, it occaſions a conſiderable degree of thickneſs of the herniary ſac, particularly at its neck; an adheſion of it to the ſurrounding parts; and conſtitutes an incurable form of chronic hernia. This ſpecies of the diſeaſe, however, is leſs frequently

the conſequence of acute hernia, than of that which comes on in a ſlow and inſenſible manner, the protruſion not being accompanied with ſtricture, or with pain; and, where the bowels have remained a long time down, without producing any alarming ſymptom.

In a few hours after ſtrangulation, in many inſtances, an effuſion of coagulable lymph may be obſerved on the ſurface of the inteſtine. The thickneſs of this varies in different inſtances *.

There is probably a ſimilar effuſion between the coats of the protruded inteſtine, as the effuſion on the ſurface cannot ſufficiently account for the remarkable increaſe of the ſize.

Fig. 2d of plate 5th, ſhows a part of the ileum, which had been protruded in a caſe of crural hernia, adhering to the under portion of the ſac that contained it, by means of a layer of coagulable lymph of conſiderable thickneſs.

The omentum alſo often adheres to the neck, ſide,

* Vid. Tab. 2d. Fig. 1ſt ſhows an inſtance of ſuch an effuſion, in which the layer of coagulable lymph was about the thickneſs of a piece of gold leaf.

ſide, or under part of the herniary ſac. In ſuch a caſe, the hernia cannot be reduced; nor can preſſure be applied in ſuch a manner as to prevent the other bowels from deſcending into the ſac.

The inteſtines are ſometimes of a dark brown or black colour, although no mortification has taken place. This is chiefly owing to the veins of the looſe internal cellular coat being gorged with blood, the colour of which ſhines through the other coats of the bowels; and alſo to a ſimilar circumſtance on the ſurface of the inteſtine; in this inſtance, the blood having been previouſly preſſed out of the veſſels, they ſoon fill again. When mortification has affected the bowels, it renders them ſo tender and flabby, that, when handled, they tear like a piece of wetted paper *.

In ſome caſes, mortification is the means by which the patient's life is protracted: For, in ſome inſtances of the inguinal hernia, it happens,

 that

* Vid. Diagnoſis, for an account of the other ſymptoms of mortification of the bowels.

that the protruded portion of inteſtine is thus caſt off; and from the part of inteſtine above the protruded portion adhering to the ring, the patient drags on a miſerable life; the faeces paſſing through a praeternatural anus, at the ring of the abdominal muſcles.

In ſome caſes of ſcrotal hernia, the preſſure of the bowels deſtroys the teſticle, or brings on an induration of the omentum.

OF THE NATURE OF THE HERNIARY SAC.

The herniary ſac is formed by the peritoneum, or membrane which lines the abdominal muſcles, puſhed forwards by the protruded bowels; or, in other words, the herniary ſac is formed by a portion of elongated peritoneum.

In a common caſe of hernia congenita, the proceſs of peritoneum, which afterwards forms the tunica vaginalis, covers the protruded bowels.

In the uſual inſtances of ſcrotal hernia, the

ſpermatic

ſpermatic chord and teſtis are uſually placed at the poſterior part of the tumour, covered by its original proceſs of peritoneum, the under part of which anatomiſts call its vaginal coat, and the bowels are placed before it, and contained within another portion of peritoneum, which has been puſhed out by the protruded bowels.

In caſes of cyſtocele, the herniary tumour has not the uſual ſac.

An unuſual variety of herniary ſac has been deſcribed by Mr Hey, of Leeds, which he met with in a child 15 months old *.

The

* In the hernia which I am deſcribing, the inteſtine was protruded after the aperture in the abdomen was cloſed; and therefore the peritoneum was carried down along with the inteſtine, and formed the hernial ſac. It is evident alſo, that the hernia muſt have been produced while the original tunica vaginalis remained in the form of a bag as high as the abdominal ring; on which account that tunic would receive the hernial ſac with its included inteſtine, and permit the ſac to come into contact with the teſticle. The proper hernial ſac, remaining conſtantly in its prolapſed ſtate, contracted an adheſion to the original proceſs of the peritoneum which ſurrounded it, except at its inferior extremity: there the external ſurface of the hernial ſac was ſmooth and ſhining, as the interior ſurface of the tunica vaginalis is in its natural ſtate.

From all theſe circumſtances it is evident, that this hernia differ-

ed

The ſac, eſpecially the neck of it, in caſes of chronic herniae, has been found of a conſiderable thickneſs, and ſometimes evidently conſiſting of a number of layers, and having a ſufficient aperture to let the bowels paſs and repaſs, without riſk of ſtrangulation.

In other caſes, the ſac has been found to have undergone an oppoſite change; inſtead of thicker, having become thinner than natural; probably from the abſorbent veſſels, in conſequence of irritation, being ſtimulated to take on an unnatural degree of action.

A ſingular inſtance of this kind is preſerved by my father in his muſeum, where the bowels of an umbilical hernia appear to be covered by the ſkin only.

The herniary ſac has been, in ſeveral inſtances, deſtroyed by ulceration.

Mr

ed both from the common ſcrotal rupture, in which the hernial ſac lies on the outſide of the tunica vaginalis; and alſo from the hernia congenita, where the prolapſed part comes into contact with the teſticle, having no other hernial ſac beſides the tunica vaginalis.

Mr Ruſſel, ſurgeon, informed me of a caſe, where the ſac of the hernia had become ſo tranſparent, that the vermiform contractions of the bowels were diſtinctly ſeen through it *.

There are inſtances upon record, in which the herniary ſac had become ſo thin as to burſt from a ſlight degree of violence.

In different chirurgical authors, as Arnaud, &c. there are inſtances recorded, in which there were two herniary ſacs, and with different paſſages of communication with the abdomen.

Tab.2d, fig.2d, repreſents a variety of that form of diſeaſe which, as far as I know, is not deſcribed by any author. It occurred in the perſon of a woman, who died in conſequence of the operation for hernia. In this inſtance, a ſmall herniary ſac was found at the ſide of a much larger one; and, within the larger herniary ſac, (which was filled only with bloody water), there were two ſmaller herniary ſacs: ſo that there are four diſtinct ſacs. When the operation was performed,

* The ſame obſervation was made by Dr Marſhall, reader on anatomy in London.

formed, it was neceſſary not only to cut through the larger ſac, but alſo to divide the ſmaller ſacs, before the inteſtines were expoſed *.

Mr Hunter, in his catalogue, when deſcribing this preparation, obſerves, that it ſtrongly illuſtrates one or other of the following circumſtances: either the mode in which an old hernia is formed, or the proceſs by which hernia is cured. But which of theſe proceſſes was going on is very difficult to determine, as the previous hiſtory of the patient is not given in Mr Hunter's catalogue †.

It may be worth while to add, that, in conſequence of the diſtention of the ſkin and cellular membrane over the ſac, theſe become, in ſome inſtances, thicker than uſual.

The degree of thickening of theſe parts depends, in ſome meaſure, upon the ſize of the tumour,

* This table was taken from a preparation in the collection of the Royal College of Surgeons of London; and I am indebted to my very worthy friend, Dr Baillie, for it, as he got me their permiſſion to take the drawing.

† Vid. Figures 2d and 3d of Tab. 2d.

mour, and duration of the diſeaſe, and takes place to the greateſt extent in old herniae.

OF THE GENERAL CAUSES OF HERNIA.

THE cauſes of hernia are various and oppoſite.

1ſt, Sudden and violent muſcular exertion.

2d, Blows upon the abdomen.

3d, Debility, or a partial degree of relaxation in the natural paſſages through the abdominal muſcles.

4th, An unuſual enlargement of one or other of the viſcera of the abdomen or pelvis, ſo as to occaſion diſtention of the parietes of the abdomen.

5th, An enlargement of the paſſage through the abdominal muſcles by diſeaſe.

To the firſt head may be aſſigned all thoſe inſtances of hernia, occaſioned by the violent action of the diaphragm and abdominal muſcles, as in raiſing and carrying heavy weights, or in leaping;

leaping; during the actions of vomiting, coughing, or laughing; or during the ſtraining, in the excluſion of indurated faeces, or of the foetus in caſes of difficult parturition.

Herniae, when produced in this manner, are the immediate conſequence of the exertion, and attended with a conſiderable degree of pain.

To the 3d head may be referred all thoſe inſtances of hernia which we meet with in infants; and in females, naturally of a relaxed habit of body, whoſe conſtitutions have been enfeebled or broken down by having had many children; or, by age; by long reſidence in a warm or moiſt climate; by a ſedentary life, or improper diet; by bad health or the abuſe of medicines *.

Dr Camper is of opinion that the relaxation of the meſentery concurs with the relaxation of the abdominal

* I attended a tall young man, of a weak habit of body, who, on account of a venereal eruption, was obliged to confine himſelf to his room for ſome time, and to take a conſiderable quantity of mercury; in conſequence of taking violent exerciſe upon getting abroad, he was ſeized with a hernia in each groin on the ſame day.

abdominal muſcles in the formation of this diſeaſe *.

It may be obſerved, likewiſe, that the diſpoſition to hernia is peculiar to certain families; for, in ſome inſtances, it ſeems hereditary.

Thoſe who are afflicted with hernia, in conſequence of debility, ſeldom run much riſk of ſtrangulation. They are ſubject to a degree of fulneſs, ſenſe of weight and preſſure, and tenſion in the groin ſcarcely amounting to pain, which are increaſed by coughing, flatulency, or after violent exerciſe.

The tumour is at firſt ſmall, becomes very gradually larger; and the pain is ſo trifling, that the patient, until the tumour has increaſed to a conſiderable ſize, remains ignorant of the nature of his diſeaſe.

Whether the ventral hernia is owing to the firſt or ſecond of theſe cauſes, is ſtill undetermined.

Moſt authors ſuppoſe that this form of hernia ariſes

* "Relaxatur vero etiam meſenterium, ceditque vi muſculorum "abdominis ac diaphragmatis; urgetur, propellitur, propter in-"guinum laxitatem, inteſtinum, omentum, ſaepe utrumque."

Vid. CAMPER de Bubonocel. page 11th.

ariſes in conſequence of the relaxation of the muſcular fibres of the parietes of the abdomen. But, it appears to me more probable, that it is generally occaſioned by a rupture of ſome of the tendinous fibres; as it happens moſt commonly at the linea alba; occurs most frequently in robuſt young perſons; and is the immediate conſequence of violent muſcular exertion.

It may poſſibly likewiſe be the conſequence of a partial weakneſs of the abdominal muſcles, cauſed by abſorption of part of their fibres. Do not the inſtances obſerved of general abſorption, render ſuch partial abſorptions ſomewhat probable?

The two cauſes of herniae above mentioned, viz. ſtrong muſcular action and partial debility, ſeem diametrically oppoſite to each other. Yet it cannot be doubted, however paradoxical it may appear, that theſe very oppoſite cauſes ſometimes concur in the formation of the diſeaſe. A proof of this, is the frequent occurrence of the complaint among the negroes in the Weſt Indies, equally expoſed to the relaxing

effect

effect of a warm climate, and to long and great muſcular exertion.

An unuſual increaſe in the bulk of any of the viſcera of the abdomen or pelvis, to ſuch a degree, as to occaſion diſtention in the parietes of the abdomen, I have enumerated as a 4th cauſe of hernia.

To this may be imputed the frequency of umbilical hernia amongſt old fat women. And hence, alſo, the umbilical hernia is the conſequence of pregnancy; eſpecially in women who have had many children, and at ſhort intervals.

Authors, who deſcribe the ſtate of pregnancy, mention the projection of the navel, as a common ſymptom. The umbilical ring, in ſuch caſes, being diſtended beyond its natural ſize, is apt to remain ſo; and, conſequently, the enlargement of the navel to continue, eſpecially in women of a relaxed habit of body, even after delivery. This enlargement becomes greater and greater in every future pregnancy, until at laſt it terminates in a perfect umbilical hernia.

As

As all cauſes which enlarge the ring in the abdominal muſcles, prediſpoſe to inguinal hernia, it ſeems probable, that the enlargement of the ring, in conſequence of the teſtes paſſing through it, may be a prediſpoſing cauſe of hernia congenita, or bubonocele, and it has been obſerved, that by far the greateſt number of children afflicted with hernia, are males.

A diſeaſe in the blood veſſels of the ſpermatic chord produces the ſame effect. My father informed me of the caſe of a man, whom he attended, in which varix of the veins of the ſpermatic chord of the left ſide, of many years ſtanding, ſeemed to have paved the way for an inguinal hernia.

The teſtes ſtopping at the ring, inſtead of paſſing down into the ſcrotum, as ſometimes happens in adults, is another ſource of inguinal hernia.

Having given an account of the cauſes and various ſpecies of hernia; it may be neceſſary to point out the peculiarities of age and ſex,

ſex, or of conſtitution, more or leſs favourable to the different forms of hernia.

The foetus in utero, from not having breathed, and other cauſes, has not been found afflicted with hernia. Infants, eſpecially in the firſt month after birth, if proper preſſure has not been applied to the part, are extremely liable to ſuffer from umbilical hernia. If boys, the diſeaſe is leſs formidable, and of leſs conſequence, as they commonly outgrow it; but, in girls, it often lays the foundation of the complaint, eſpecially when they become pregnant at an after period of life.

Boys are moſt ſubject to hernia congenita at or immediately after birth, as the canals through which the teſtes paſs into the ſcrotum are not always then ſhut *.

* Infants of the female ſex may be afflicted with a ſpecies of hernia congenita, as a canal, formed by the peritoneum, paſſes through the ſpermatic ring. This canal is about half an inch in length, and ends in a cul de ſac. Vide Nuck Adenographia. Dr Camper informs us, that he found this canal open only in 3 of 14 female infants after birth; and he adds, that he had diſcovered traces of that canal in women who died during delivery. Vid. Acad. Haarlem, tom. vi. and vii.

Dr Camper gives us * the following obſervations with reſpect to the obliteration of that canal: he examined, for that purpoſe, the bodies of 17 new-born male children.

In 11, the canal was open on both ſides.

In 3, a portion on the right ſide was open.

In 2, a portion on the left ſide was open.

In 1 only, the canal was obliterated on both ſides.

Men are alſo ſometimes afflicted with hernia congenita, owing to the original paſſage betwixt the abdomen and ſcrotum remaining open, and to the teſtes ſtopping at the ring of the abdominal muſcles, inſtead of paſſing into the ſcrotum.

The teſtis keeps the uppermoſt part of the paſſage open, and it enlarges by the growth of the teſticle. The bowels readily ſlip down into this paſſage, and are ſtrangulated within it, in conſequence of ſome violent exertion.

Such herniae can always be traced from the birth of the patient.

Women

* Vid. Acad. de Haarlem, tom. vi.

Women, from corpulency, frequent pregnancy, or difficult labour, are often affected with umbilical hernia. They are alſo, for a reaſon which I ſhall endeavour to aſſign in the ſubſequent part of this paper, more ſubject to crural hernia than men.

Boys and men are more ſubject to bubonocele than women, owing to the ſpermatic chord being of a much larger ſize than the round ligament of the womb; and perhaps alſo from the rings in boys being a little enlarged by the teſtes paſſing through them.

The young, active, and robuſt, are moſt frequently afflicted with ventral hernia.

OF THE DIAGNOSIS.

As, in the preceding part of this paper, a general account has been already given of the nature and varieties of herniae (with the exception of diaphragmatic hernia), it is only neceſſary in this chapter to enumerate thoſe

ſymptoms which indicate the approach of the complaint, and thoſe which are common to all kinds of the diſeaſe.

A conſtant ſenſe of uneaſineſs or preſſure around the groin, increaſed by coughing or exerciſe, and diſtinguiſhable by the hand applied to the groin, and occurring in a perſon of a relaxed habit of body, is, in many examples, the forerunner of hernia.

The ſituation, ſudden appearance of the tumour, and ſex of the patient, in ſome meaſure point out the nature of the diſeaſe; but it is ſtill more certainly, in ſome caſes, determined by an accurate examination of the tumour, while the patient is in different poſtures. The ſenſation ariſing from the examination of ſuch tumours will vary according to the nature of its contents.

When a portion of inteſtine only is included within the herniary ſac, the tumour is ſoft and elaſtic, and ſeems as if filled with air: its contents ſeem to glide or to ſlip upon each other; it diſappears frequently with a gurgling noiſe

noiſe upon preſſure, or when the patient lies down; it re-appears when he gets up. When the patient coughs, the tumour preſſes on the hand of the perſon who is employed in examining it; when the hand is removed, it increaſes in ſize. When a portion of the omentum is alſo included within the herniary ſac, the tumour feels knotty, and is generally larger than where there is nothing but inteſtine within it; but if a quantity of faeculent matter is contained within the inteſtine, within the hernial ſac, it is evident that ſuch a tumour may bear an impoſing reſemblance to that containing omentum: hence the diagnoſtic ſymptoms muſt be drawn, not from the ſenſation which the touch communicates, but from the other concomitant ſymptoms.

The ſymptoms in the acute and chronic ſpecies of herniae are very different. The ſymptoms of the acute ſpecies very much reſemble thoſe of ileus, they vary a little, and come on more or leſs rapidly, according to the degree of ſtricture upon the protruded portion of bowel,

and according to the conſtitution of the patient.

The patient ſuffers very much from pain in the tumour propagated to other parts of the alimentary canal, which is ſoon followed by inflammation.

From the remarkable degree of ſympathy ſubſiſting between different parts of the alimentary canal, its action is inverted in caſes of ſtrangulated hernia; nauſea, exceſſive ſickneſs, and vomiting, follow; and, in ſome inſtances, a browniſh yellow faeculent matter has been rejected by vomiting.

Nothing paſſes through the body.

In ſome inſtances, convulſions are the effect of hernia, and ſometimes tetanus.

The pulſe is generally ſmall and quick, but ſometimes not affected, though inflammation has been found to have occupied the protruded portion of inteſtine.

The ſkin is generally hot and parched. In the latter ſpecies of hernia, even where the protruded portion of bowel cannot be return-

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ed, the degree of conſtriction is ſo inconſiderable as not to impede the free circulation of blood through the veſſels, nor the free paſſage of faeces through the protruded portion of inteſtine; ſo that, in this ſtate of diſeaſe, the patient, by preventing coſtiveneſs, and by attention to diet, may enjoy a tolerable ſhare of health.

Mr Calliſen * gives the following catalogue of ſymptoms, for aſſiſting the ſurgeon in diſcovering whether or not there is an adheſion between the protruding portion of inteſtine and herniary ſac:

Signa ſpecialia, quae adheſionem partium elapſarum aut inter ſe, aut cum ſacco hernioſo, ejuſque naturam agglutinativam, fibroſam, fungoſam, totalem intimumque coalitum indicant, ex herniae vetuſtate, et longiore extra abdomen mora, partiali aut totali immobilitate, abſque incarcerationis notis, interdum tamen, cum hoc ſtatu juncta, deſumuntur; (he very juſtly adds), certitudine tamen carent, donec,

* Vid. Syſtem. Chirurg. Hodiern. pag. 452. vol. 2. edit. 2da.

donec, inciſione adhibita, clarius eluceſcat mali natura.

The ſymptoms of gangrene having affected the hernial tumour are, pain in it ſuddenly ceaſing, though the ſtrangulation has not been removed; pain in the abdomen, as inflammation in other parts of inteſtine has not run on to gangrene; tumour ſo flaccid as to retain the marks of the preſſure of the finger; leaden or blackiſh colour of the tumour; ſeparation of parts of its cuticle; little veſicles under the cuticle; ſinking of the pulſe, and coldneſs of the extremities.

May we not conjecture that a patient labours under diaphragmatic hernia, providing he is afflicted with the uſual ſymptoms of hernia, without any external tumour, when he has had a degree of difficulty in breathing during the greater part of his life, when all the ſymptoms are much aggravated by violent exerciſe, and when a ſound like that of borborygmi may be heard in the thorax, when the patient ceaſes for a moment to act with his diaphragm, or to move his ribs?

OF THE PROGNOSIS.

In every ſpecies of hernia, the prognoſis is unfavourable, in ſo far, at leaſt, as relates to the complete recovery of the patient.

In the early part of life, indeed, the diſeaſe is often cured by preſſure alone, eſpecially in caſes of umbilical hernia in children; and there are inſtances of a complete cure being performed, in this way, on perſons more advanced in life, though theſe are not very numerous, as the diſeaſe, though in appearance cured, is apt to recur.

It is, therefore, from a chirurgical operation only, that perſons of a certain age can expect a perfect cure; but though the diſeaſe is in general only to be palliated, it ſeldom proves fatal, unleſs from accident or neglect: becauſe, when the hernia can be returned and retained by proper preſſure, all danger is avoided.

The prognoſis depends upon the nature of the

the contents of the hernial tumour, as the danger ariſes from the degree of ſtricture upon theſe. If the omentum only is protruded, no bad conſequence generally enſues, as it does not ſeem to ſerve any very eſſential purpoſe in the animal economy, unleſs the degree of ſtricture is ſo great as to impede the free circulation of blood through the protruded portion, which produces mortification, and, in ſome examples, the death of the patient.

Protruſions of the omentum are to be regarded with a ſuſpicious eye on another account, as they often pave the way for a protruſion of a portion of inteſtine; and alſo as the omentum, when once down, does not ſo readily return into the cavity of the abdomen, as a portion of inteſtine; or the ſtricture produces, in ſome caſes, an induration or enlargement in the protruded omentum, which cannot, in that ſtate, be returned through the neck of the ſac. In thoſe caſes where, owing to to an adheſion of the omentum to the ſac, preſſure cannot be applied with advantage, the ring

is

is commonly ſo much enlarged as to preclude all danger of ſtrangulation; and perſons afflicted with ſuch chronic herniae have leſs chance of obtaining a radical cure than thoſe afflicted with the acute herniae.

In the acute hernia, there is always great danger, if the bowels cannot be immediately returned, as inflammation and its fatal conſequences, ſo quickly and ſo certainly follow; and, in chronic hernia, the complaint has been known to terminate fatally, from ſtricture of the inteſtine, when very little pain or inflammation had been induced, and where the medical attendants had, from ſuch circumſtances, been lulled into a fatal ſecurity.

ON

ON CRURAL HERNIA.

HAVING premiſed ſuch general obſervations as ſeem neceſſary for explaining and elucidating the nature of hernia in general, I ſhall now proceed to explain the peculiar nature of crural hernia, the manner in which the crural arch is affected in the diſeaſe, the relative ſituation of the neighbouring blood-veſſels and nerves in reſpect to the tumour, the effects of the ſtricture of the crural ring upon the contents of the tumour and its ſac, and the peculiar ſymptoms of crural hernia. I ſhall then conſider what prognoſis may be formed, and, laſtly, point out the ſafeſt mode of removing the complaint by a chirurgical operation.

As was propoſed, I ſhall premiſe an anatomical deſcription of the crural arch.

ANATOMICAL

ANATOMICAL DESCRIPTION OF THE CRURAL ARCH.

Mr Gimbernat is the only author who appears to have examined the ſtructure of the crural arch with that attention which the importance of the ſubject requires.

From the peculiar ſtructure of parts, he has in part explained the reaſon why crural hernia is leſs frequent than bubonocele, and has alſo pointed out not only the ſafeſt, but alſo the ſureſt mode of taking off the ſtricture upon the protruded portion of inteſtine, or of performing the operation for crural hernia. His deſcription is, however, rather too minute, and ſomewhat obſcure; chiefly owing to the want of ſuitable plates, for the plates annexed to the Engliſh tranſlation of his treatiſe (which, I preſume, were faithfully copied from the original plates) are executed in ſuch a manner as by no means to illuſtrate properly the text of the author. Beſides, even though well executed,

cuted, they do not appear to me to exhibit ſuch views of thoſe parts, as can convey an accurate idea of the ſituation or ſtructure of the crural arch.

Another great imperfection, which applies equally to Mr Gimbernat's deſcription and plates, is, that he deſcribes and exhibits views of the crural arch in the male ſubject only, which I have diſcovered to be materially different in ſtructure in the female, although the knowledge of the parts in the female is of infinitely more moment, as women are moſt liable to crural hernia.

Mr Hey obſerves, page 150: "I have now performed the operation for the femoral hernia 14 times in the female, and twice in the male:" and, in page 154, he obſerves, "In all the inſtances of ſtangulated inteſtinal hernia in females, which have occurred in my practice, the hernia was of the femoral kind *."

OF

* Vid. Practical Obſerv. in Surgery.

OF THE STRUCTURE OF THE UNDER PORTION OF THE TENDON OF THE EXTERNAL OBLIQUE MUSCLE OF THE ABDOMEN, FORMERLY CALLED LIGAMENT OF POUPART OR FALLOPIUS, NOW CRURAL ARCH.

In drawing out this deſcription of the crural arch, I have, in several particulars, availed myſelf of the previous labours of Albinus and Gimbernat.

A ſtrong and broad tendinous aponeuroſis is attached to the lower portion of the external oblique muſcle of the abdomen. The ſtronger fibres of that aponeuroſis deſcend obliquely inwards and downwards, and are diſpoſed nearly parallel with reſpect to each other: there are alſo many thin tendinous fibres which paſs acroſs the larger fibres, and which deſcribe a ſmall part of a circle, and are directed upwards.

The tendon is fixed to the anterior ſpinous proceſs of the ileum, and its loweſt part to the

the oſſa pubis and their ſynchondroſis; and is deſcribed by Mr Gimbernat, as forming a duplicature inwards, and as forming a canal for the ſpermatic veſſels in the male, and the round ligament of the womb in the female. On preſſing the under part of the tendon between the finger and thumb, it feels thicker than any other part of the tendon, and there ſeems to be a certain proportion of ligamentous matter added to it.

It is thicker and broader towards the oſſa pubis, than near the anterior ſuperior ſpinous proceſs of the ileum.

The aponeuroſis of the external oblique muſcle divides into bands, to form the inguinal ring, one of which goes before, the other goes behind the ſpermatic chord of the male, or round ligament of the female.

That which paſſes behind, is inſerted into the creſt of the pubis.

This diviſion of the fibres of the tendon into two chords, which form the ring, takes place in ſome ſubjects, two or three inches above the ring; in others, near the ring.

The

The intermediate ſubſtance is covered by a very thin tendinous aponeuroſis, through which the fibres of the internal oblique muſcle are ſeen, and the cremaſter muſcle in the male.

The ring is ſomewhat of an oval figure, and there is a ſmall quantity of cellular ſubſtance, and ſcattering tendinous fibres within it.

The ſpermatic chord of the male, and round ligament of the womb in females, paſſes through it.

The tendinous aponeuroſis, which covers the muſcles of the thigh, is ſaid to take its origin from the crural arch; we ſhould rather ſay, it is ſtrongly connected to the crural arch, for the fibres of both aponeuroses ſeem to be interwoven. This intimate union of parts keeps the crural arch tight; upon bending the thigh, or cutting the faſcia of the thigh, the crural arch is relaxed.

The crural blood-veſſels, lymphatics of the inferior extremities, and tendons of the inter-

nal iliac and great pſoas muſcles and bowels, in caſes of crural hernia, paſs behind the crural arch.

As no verbal deſcription can convey ſo accurate an idea of the relative ſituation of the internal parts as a plate, inſtead of delivering a full account, in words, of the ſtructure of the crural arch on its inner ſide, I refer the reader to the explanation of plate 3d, fig. 1ſt, and plate 4th, fig. 2d.

The thickened portion of the tendinous aponeuroſis of the external oblique muſcle ſomewhat reſembles a vault, and hence it is called crural arch.

A little below this ligament, or aponeuroſis, next to the pubis, a duplicature of aponeuroſis is placed, which paſſes upwards and inwards, and is attached to the aponeuroſis which covers the internal iliac muſcle: This duplicature Mr Gimbernat names the internal edge of the crural arch. Vid. a, b, c, d, tab. 3d, fig. 1ſt. *

This

* This part, marked by letters c, d, plate 3d, fig. 1ſt, is divided by him in performing his operation for crural hernia.

This duplicature may be diſtinctly perceived by paſſing a finger along the external iliac blood-veſſels (the abdomen having been previouſly laid open), into the aponeurotic ſheath of the external iliac artery and vein.

It preſents a firm and reſiſting ſurface; its edge is very thin; and I diſcovered that it is conſiderably broader in the male than in the female.

When the thigh and leg are raiſed to nearly a right angle with the body, the internal edge of the crural arch is much leſs diſtinctly felt, than when every part of the body is in the horizontal poſition; and hence, in ſuch a poſture, the bowels may not only more readily puſh downwards, and form a crural hernia, but, when down, they will be more readily returned into the cavity of the abdomen.

Hence the ſurgeon ſhould, while attempting what ſurgeons call the taxis, or, in plainer language, an attempt to return the protruded bowels into the abdomen, always bend the

thigh of that ſide to nearly a right angle with the body.

The round ligament of the uterus paſſes obliquely through the abdominal muſcles, and is ſurrounded by cellular ſubſtance, which Mr Gimbernat deſcribes as forming a canal. A tendinous aponeuroſis, compoſed of longitudinal fibres, which are croſſed by other thin fibres, covers the internal iliac muſcle, and is intimately united with the crural arch; ſo that crural hernia can only happen on the inner ſide of the external iliac vein.

Between the external iliac vein, and the ſpine of the os pubis, there is a ſmall aperture, which is formed by the creſt of the os pubis paſſing obliquely inwards, and by the under and inner portion of the crural arch, which is attached to the ſpine of the os pubis *.

This aperture is much more conſiderable in the female than in the male pelvis, not only on account of the difference in the form and length of the bones of the ſexes, but alſo on

* Vid. plate 3d, letter x, fig. 1ſt; and tab. 4th, fig. 2d.

on account of the very different ſhape of the internal part of the crural arch next the pubis *.

A tendinous ſheath encloſes the external iliac veſſels, and other parts; the fore part of which is formed by the upper and inner portion of the faſcia lata of the muſcles of the thigh, (which faſcia takes its origin from, and is attached to the inner ſide of the crural arch), and the back part of it is formed by the continuation of the tendinous aponeuroſis of the internal iliac muſcle, which paſſes behind the external iliac veſſels, and is inſerted cloſe to the external edge of the pectineus muſcle.

Another portion paſſes over the pectineus muſcle, and is inſerted into the oſſa pubis.

The external iliac blood-veſſels fill up the principal part of the orifice of the ſheath: the round ligament of the uterus of the female, or ſpermatic chord in the male, ſhuts up a little of the external ſide, and the epigaſtric veſſels cover its anterior and internal part, on

 their

* Compare fig. 1ſt of plate 3d; and fig. 2d of plate 4th.

their way to the rectus muſcle of the abdomen.

The epigaſtric artery is commonly ſent off from the anterior part of the external iliac artery, before it enters the ſheath; and the circumflex artery from the external and lateral part of the external iliac artery, after it has entered the ſheath.

OF THE SITUATION, SIZE, AND FIGURE OF THE CRURAL HERNIA.

In the crural hernia, the bowels are protruded through an aperture on the inner ſide of the external iliac vein, which, in fig. 1ſt of plate 3d, is marked by the letter x.

The crural hernia is leſs frequent than the inguinal.

It is much more prevalent amongſt females than males, becauſe the crural arch of the female is longer and looſer than that of the male, owing to the greater width of the female pelvis. Beſides, the internal

edge

edge of the crural arch is not nearly ſo broad next the pubis in the male as in the female; and hence the crural ring of the female is larger, and the bowels are more readily protruded through it *.

On the other hand, women are leſs ſubject to inguinal hernia than men, from the round ligament of the uterus being of ſmaller ſize than the ſpermatic chord, and alſo from a greater portion of the poſterior part of the canal, through which the round ligament of the uterus paſſes, being ſupported by the internal edge of the crural arch †.

Crural hernia appears, from the ſtatement of Arnaud, to be more frequent amongſt married than unmarried women. He informs us, that of twenty women afflicted with crural hernia, nineteen were married.

In caſes of crural hernia, the tumour is leſs moveable than in ſcrotal hernia, as it is immediately

* Compare fig. 1ſt of plate 3d with fig. 2d of plate 4th.

† Figure 2d of Dr Camper's 13th plate illuſtrates that part of ſtructure in the female.

mediately covered and bound down by the tendinous aponeurosis of the muscles of the thigh; and sometimes also, in consequence of inflammation bringing on adhesion, the tumour is firmly united to the surrounding cellular membrane.

The neck of the tumour, from the pressure of the crural arch, is commonly narrow *.

The body of the tumour is generally of a smaller size than that of a scrotal hernia: it is not exactly round, but a little flattened, from the pressure of the tendinous aponeurosis of the muscles of the thigh.

In some instances, the tumour seems as if it were tilted upwards upon the crural arch: The crookedness of the passage must increase the difficulty of returning the bowels into the cavity of the abdomen, and consequently renders the risk of strangulation much greater than usual.

In the scrotal hernia, the tumour sometimes acquires a great size, as the peritoneum not being

* Vid. fig. 2d of plate 3d.

being here ſupported by a tendinous covering, gradually gives way to the weight of the bowels; one portion dragging another after it, until at laſt the tumour has been found to contain a large ſhare of the moveable part of the alimentary canal, and to hang down nearly to the patient's knees, notwithſtanding which, he often enjoys a tolerable ſhare of health.

From the above deſcription of the ſituation, ſize, and coverings of the crural hernia, it is obvious, that a ſurgeon will find much more difficulty in diſcovering the nature of this diſeaſe, and of aſcertaining the contents of the tumour, than in ſcrotal hernia; and that the diagnoſtic in this hernia muſt be more difficult, as it may readily be miſtaken, in its beginning, for an enlargement of one or more of the neighbouring lymphatic glands, or for a collection of matter puſhing downwards from a lumbar abceſs.

OF THE SITUATION OF THE BLOOD-VESSELS IN RESPECT TO THE HERNIAL SAC.

FIG. 2d of plate 1ſt points out the ſituation of the neighbouring blood-veſſels, and ſpermatic chord, in reſpect to a ſcrotal hernia.

It exhibits an inſide view of the pelvis of a boy who had been afflicted with a ſcrotal hernia; and it ſhows that the epigaſtric artery paſſes beneath the ſpermatic chord and vas deferens, then behind and on the inner ſide of the hernial ſac, in its courſe to the inner ſide of the rectus muſcle of the abdomen.

The ſituation of the ſpermatic chord, vas deferens, and epigaſtric artery, in reſpect to the herniary tumour, however correſpond with Dr Camper's deſcription and plates, although this is a different view: and, in juſtice to him, it is neceſſary to add, that in his Obſervat. Anat. Patholog. (edit. 1762), he had deſcribed the epigaſtric artery as being placed at the inner ſide of the hernial tumour, in

the

the following paſſage: "Arteria cum vena epigaſtrica ſimul ac rectum muſculum incedit, haec vero pubi, illa ilium oſſi proprior eſt, funiculus ſpermaticus abdomen egrediens arteriae adjacet: in herniis inguinalibus arteria et vena epigaſtrica verſus pubem a prolapſis inteſtinis compelluntur."

Having given ſuch a deſcription of the ſituation of the epigaſtric artery, it ſeems very ſtrange that he ſhould have conceived it not poſſible to divide the epigaſtric artery in performing the operation for bubonocele; for his own plates prove, in the cleareſt manner, that as the epigaſtric artery is placed on the inner ſide of the inguinal hernia, it may be divided, if the ſurgeon makes a long inciſion inwards, towards the linea alba.

Mr Rougemont, the tranſlator of Richter's excellent treatiſe on hernia, ſtates, in the ſubſequent paſſage, the ſentiments of ſeveral very celebrated ſurgeons, with regard to the ſituation of the epigaſtric artery, in reſpect to the hernial ſac, in caſes of bubonocele, and alſo

their

their methods of performing the operation for the removal of that kind of hernia.

He adds ſeveral very pertinent obſervations, which, to me, ſeem to merit inſertion in this paper *.

Plate

* Les ſentimens ſont partagés ſur la ſituation de cette artère au côté interne ou au côté externe de l'anneau, ceux qui la croyent placée en dehors, recommandent d'inciſer l'anneau en dedans, ceux qui la croyent placée en dedans, recommandent d'inciſer l'anneau au dehors. Mr Richter eſt, comme on voit, du premier ſentiment, & dit formellement : *L'artère épigaſtrique paſſe ordinairement à l'angle externe & ſupérieur de l'anneau, & il eſt évident qu'on s'expoſe à l'ouvrir, ſi on inciſe l'angle externe de l'anneau.* Meſſieurs Chopart & Desault préſcrivent une variation dans la direction de l'inciſion, ils admettent l'artère épigaſtrique au côté interne de l'anneau, & rarement au côté externe dans le cas de hernie, de manière qu'ils préſcrivent de diriger ordinairement l'inciſion en haut & en dehors, quand le cordon eſt derrière & au côté interne du ſac; & en haut & en dedans, quand le cordon eſt au côté externe du ſac. Pour accorder ces divers ſentimens, il ſuffit d'examiner un moment la diſpoſition des parties, pour voir que l'opinion de Mrs. Chopart & Desault eſt fondée ſur une autopſie exacte. Le conduit déférent & les vaiſſeaux ſpermatiques en traverſant l'anneau pour ſe rendre dans le Tiſſu cellulaire du péritoine ſont placés au côté externe de l'artère épigaſtrique & comme ces parties ſuivant une direction oblique de dedans en dehors, il s'enſuit qu'en examinant la chose dans un Cadavre où il n'y a point de hernie, on voit réellement l'artère épigaſtrique plus ou moins près de l'angle externe de l'anneau, ainſi il n'eſt point ſurprenant qu'en inciſant

Plate 4th, fig. 1ſt, exhibits an inſide view of the pelvis of a woman who died in conſequence

inciſant dans le Cadavre de l'angle interne de l'anneau tranſverſalement vers la ligue blanche, Mr MOHRENHEIM n'ait jamais inciſé cette artère, tout cela eſt vrai quant à l'état naturel des parties, mais ſi l'on examine la diſpoſition de cette artère dans des ſujets qui ſont morts avec des hernies, on trouvera ordinairement l'artère épigaſtrique à l'angle interne de l'anneau, & ſi on diviſe alors tranſverſalement de l'angle interne vers la ligne blanche, on coupera ſans contredit cette artère. Dans tous les ſujets que j'ai diſſéqués, & qui avoient des hernies inguinales, j'ai toujours trouvé d'après la remarque de Mr DESAULT l'artere épigaſtrique vers l'angle interne de l'anneau, & je n'ai encore vu qu'une exception : au moment où je rédige cette note, j'ai reçu un Cadavre avec une hernie inguinale au côté gauche, où j'ai fait voir l'artère épigaſtrique placée au côté interne du commencement du ſac : mais dira-t-on, comment cette artére placée ordinairement à l'angle externe de l'anneau peut-elle ſe trouver dans une hernie inguinale vers l'angle interne, je repondrai que ce changement de poſition eſt produit par les viſcéres, qui s'echappant de dehors en dedans, de haut en bas, pouſſent le cordon en dedans, & á la partie poſtérieure de l'ouverture de l'anneau, or comme l'artère épigaſtrique eſt placée au côté interne de ces vaiſſeaux ſpermatiques, elle eſt neceſſairement deviée plus en dedans : d'ailleurs les hernies inguinales ſe forment ordinairement par l'angle externe de l'anneau. (Voyez ci-deſſus pag. 61.) & le changement de poſition, dont je parle, a été décrit par l'illuſtre Mr. CAMPER, qui dit expreſſément : *Arteria cum venâ epigaſtricâ ſimul ad rectum muſculum incedit, hæc vero pubi, illa ilium oſſi propior eſt, funiculus ſpermaticus abdomen egrediens arteriæ adjacet : in herniis igitur inguinalibus arteria & vena epigraſtica verſus pubem a prolapſis inteſtinis compelluntur.* L. c. D'après toutes ces conſidérations

quence of crural hernia. The epigaſtric and obturator arteries have a common origin, as marked by letter f.

Plate 5th, fig. 1ſt, gives an outſide view of the

ſidérations j'en conclurai avec Mr DESAULT que l'artère épigaſtrique dans la hernie inguinale eſt ordinairement placée près de l'angle interne de l'anneau, & rarement vers l'angle externe. Les cas où cette artère eſt placée à l'angle externe de l'anneau dans la hernie inguinale ſont fort rares, & ils n'arrivent vraiſemblablement que lorſque les viſcères ſortent par la partie interne de l'anneau, & alors le cordon eſt placée au côté & un peu derrière le ſac, j'ai eu occaſion il y a deux ans d'obſerver cette diſpoſition ſur un Cadavre, j'ai conſervé cette pièce pendant quelques mois, & l'ai montrée à quelques perſonnes de l'art. Le celebre Mr MICHAELIS rapporte un fait ſemblable, il s'exprime ainſi dans une lettre à l'illuſtre Mr RICHTER. " J'ai vû à Londres " une piéce anatomique, où une hernie inguinale n'étoint point " placée comme a l'ordinaire au côté externe de l'artère épigaſ- " trique, mais au côté interne de cette artère, de manière qu'on " l'auroit diviſée, ſi on eut dilaté l'anneau en dehors, comme on " le fait ordinairement. Quand cette diſpoſition ſur 200 her- " nies ne ſe trouveroit qu'une ſeule fois, elle ſeroit toujours un " fort argument enfaveur du dilatatoire de LE BLANC." V. RICHTER'S chirurg. Bibliothek. T. VI. p. 159. Je crois d'après cela qu'il eſt permis de conclure qu'on courre moins de riſque de léſer l'artere épigraſtrique en inciſant en haut & en dehors, qu'en inciſant en haut & en dedans ; que pour reconnoître exactement la diſpoſition de cette artére il faut s'aſſurer de la poſition du cordon ſpermatique rélativement au ſac, & ſuppoſé que cela ſoit impoſſible, il faut inciſer au milieu du bord ſupérieur de l'anneau directement en enhaut.)

the body of the ſame woman, in which the farther courſe of this artery, and its ſituation in reſpect to the herniary ſac may be traced, the portion of the abdominal muſcles that covered it, having been purpoſely removed.

The epigaſtric artery appears about half an inch from the outer ſide of the neck of the ſac, then paſſing obliquely inwards and upwards to the rectus muſcle of the abdomen.

From the preceding plate, it appears, that the ſurgeon runs little riſk of dividing this artery, unleſs he makes his inciſion larger, and more outwardly on the neck of the ſac, than is proper.

Plate 6th ſhows the epigaſtric artery more upon the fore part of the tumour, and its relative ſituation with reſpect to the round ligament of the uterus, a portion of the abdominal muſcles having been cut out for that purpoſe.

Upon the whole, the particular ſituation of this artery with regard to the hernial ſac muſt depend upon the part of the external iliac

artery,

artery from which it takes its origin, which will be found to vary a little in different examples. I have ſeen the epigaſtric artery ſent off from the external iliac artery more than an inch above its exit from the pelvis. I have ſeen alſo the epigaſtric artery and internal circumflex of the pelvis come off from the external iliac artery by a common trunk within the pelvis.

Beſides the epigaſtric artery, there is another artery, which is in danger of being wounded in performing the operation for crural hernia.

I allude to the obturator artery, which though it commonly ariſes from the internal iliac artery, yet ſometimes, as in figure 1ſt of plate 4th, takes its origin in common with the epigaſtric artery.

Richter, in his treatiſe on hernia, obſerves, that he had met with ſuch a luſus *; and

* Il n'eſt pas très rare de voir l'artère obturatrice naître avec l'épigaſtrique par un tronc commun l'artère iliaque. J'ai vû cette

and Profeſſor Murray, of Upſal, makes a ſimilar remark *.

From the deſcriptions of theſe celebrated authors, the reader is led to ſuppoſe, that ſuch is by no means an unfrequent luſus naturae. It is impoſſible to determine ſuch a point with mathematical preciſion: According to my obſervations, it does not occur in above one of twenty-five or thirty caſes.

cette artère obturatrice dans un cas ſemblable ſe porter derrière la partie interne du ligament de Poupart, & ſe recourber enſuite pour gagner la partie ſupérieure du trou ovalaire, de manière qu'il peut aiſément arriver que les parties en s'échappant par l'angle interne du ligament de Poupart (comme c'eſt le cas le plus ordinaire) paſſent derrière cette artêre, de ſorte que le principe du ſac ſoit environné en devant, en dedans par un Demicercle artériel formé par l'obturatrice, en dehors il y a toujours l'artère epigaſtrique; ainſi la dilatation dans cette circonſtance dans quelque direction qu'on la faſſe en dehors, en dedans, en devant eſt toujours unie au danger de bleſſer une artêre aſſez conſiderable, & comme on ne peut reconnoître cette diſpoſition de l'artère obturatrice, & comme elle n'eſt point infiniment rare, je crois qu'on peut encore conſidérer cette varieté comme une raiſon, qui doit nous engager à tenter la dilatation.

* Pag. 81. Obturatoria. jam ex iliacae externae ramo epigaſtrico, deorſum ad pelvim, nonnunquam arteriam ablegante, jam vero et quidem frequentius ex hypogaſtricae trunco ejuſve arteria iliaca poſteriore vel iſchiadica, vel ileo lumbari pronaſcitur.

In fig. 1ſt of plate 4th, the obturator artery, having ariſen along with the epigaſtric artery by a common trunk, paſſes on the outer ſide * of the hernial ſac of a crural hernia, in its courſe to the foramen obturatorium. Richter, in a ſimilar luſus naturae, deſcribes the ſituation of the obturator and epigaſtric arteries, in reſpect to the hernial tumour, in theſe words: " De ſorte que le principe du ſac ſoit environnè en devant, en dedans par un demicercle arteriel formè par l'obturatrice, en dehors il y a toujours l' artere epigaſtrique."

An intelligent ſurgeon of this place, Mr Thomſon, ſhowed me a drawing of a crural hernia lately, in which the obturator artery, after having ariſen, along with the epigaſtric, by a common trunk, paſſes on the upper, and then on the inner ſide of the neck of the hernial ſac, and ſeems as if it ſurrounded it.

Mr

* By outer ſide, I mean, on the ſide next the anterior and ſuperior proceſs of the os innominatum; by inner, that part of the hernial ſac next the pubis.

Mr Thomſon obſerved, that he had found ſuch a diſtribution of the obturator artery to take place in ſix out of ten preparations he had examined; and therefore conſidered this circumſtance as forming an inſuperable objection to the mode of operating in crural hernia, propoſed by Mr Gimbernat.

In fig. 1ſt of plate 3d, the epigaſtric and obturator arteries are ſeen coming off from the external iliac artery at the ſame place, but not by a common trunk.

I have ſeen the obturator artery ſent off from the external iliac artery about an inch and a half above the epigaſtric artery.

I have ſeen another variety of luſus naturae, with reſpect to the origin of the obturator and epigaſtric arteries: In this variety, the epigaſtric, obturator, and internal circumflex of the upper part of the thigh were derived from the femoral artery about an inch below the crural arch.

I have ſtated all the varieties that have fallen under my obſervation with reſpect to the

origin and courſe of the epigaſtric and obturator arteries, in order to point out to ſurgeons the poſſibility, nay probability, of dividing the epigaſtric or obturator artery in performing the operation for crural hernia.

The epigaſtric artery has been ſeveral times divided in performing that operation; and, in an inſtance which occurred lately, ſo great a quantity of blood was loſt, and there was ſo much difficulty in taking up the artery by ligature, in conſequence of its retraction, that as the operator (a ſurgeon of great eminence) emphatically expreſſed himſelf, it threatened to pour out the patient's life with her blood.

Even wounds of the ſmaller branches of the epigaſtric artery, ſometimes prove fatal. Dr Carmichael Smyth has related the hiſtories of two ſuch caſes, and makes mention of other ſimilar caſes which were communicated to him, in which the patients loſt their lives by a wound made in the ſmaller branches of the epigaſtric artery, in performing

forming the operation of tapping for dropſy of the belly *.

OF THE SAC OF CRURAL HERNIA.

It is formed in the ſame manner as the ſac in other inſtances of hernia, viz. by the peritoneum, which is puſhed downwards and forwards before the protruded bowels: but the bowels, in a caſe of crural hernia, have the additional covering of the tendinous aponeuroſis of the muſcles of the thigh, which prevents the nature and contents of the tumour from being ſo readily diſcovered as in caſes of ſcrotal hernia.

In ſome inſtances of crural hernia, two ſacs have been diſcovered.

Inſtances, in which there are two ſacs, in caſes of crural herniae, are related by Mr Cal-

 liſen,

* Vid. Lond. Med. Communicat. vol. ii. pag. 484.

liſen *, and Mr Hey †, from whoſe works I have made extracts.

In the tranſactions already quoted, Mr Calliſen has given the hiſtories of two ſuch caſes (both patients were females, and conſiderably advanced in life:) in one of which, the diſeaſe was removed by a chirurgical operation; in the other, the patient died after an operation had been performed. After enumerating the previous ſymptoms of the diſeaſe, he gives the following account of the ſituation of the hernial tumour.

One of theſe tumours was ſituated "ſupra ligamentum Fallopii, vero muſculi obliqui aponeuroſis in tumorem ovi columbini magnitudinem aequantem extenſa erat, qua una cum peritoneo caute inciſa inteſtinum inflammatum ex atro rubeſcens apparuit."

The patient died after the operation; and, upon inſpecting the body after death, he found

* Vid. Act. Soc. Med. Havnienſ. vol. ii. page 321.

† Vid. Practical Obſervations in Surgery.

found that the patient had not died in conſequence of the operation, but in conſequence of a portion of the inteſtinal canal being ſtrangulated within another hernial tumour. "Cauſam mortis non in hoc loco, nec in notabili inflammatione inteſtinali inveniens, denique anſam inteſtini ilei ſatis magnam, in ſacco ab extenſo peritonæo ſingulari modo efformato incluſam detexi, Peritonæum nempe ſub ligamento lato ſiniſtro verſus ſuperiora ad muſculi Pſoas tractum ſaccum formabat, in quo inteſtini pars gangræna correpta ad angulum acutum reflexa continebatur, quæ reflexio viam inteſtiralis cavi præcluderat."

Mr Hey has given a very full hiſtory of a caſe in which there were two hernial ſacs, but which were very differently ſituated; which I ſhall alſo inſert.

" In January 1796, I was deſired to viſit Mrs Brooke of Harewood, whom I had ſome years ago cured of a ſtrangulated femoral hernia by the operation, and who now laboured under the ſame diſeaſe on the oppoſite ſide.

The

The ſtrangulation had ſubſiſted three days. She vomited frequently, and had had no ſtool; yet the abdomen was ſoft, her pulſe calm, and her tongue clean.

" I immediately performed the operation. There was nothing in the hernial ſac but omentum, except a large quantity of ſerous fluid. The omentum was in part gangrened, and adhered to the ſac. I could find no aperture into the abdomen. My patient ſeemed convinced that the inteſtine had been down before I began to perform the operation; and from the accurate deſcription which ſhe gave me of the different ſtates of her diſeaſe, I ſaw no reaſon to doubt the truth of her conjecture. She aſſured me that, during the operation, ſhe had the ſenſation which ſhe was accuſtomed to feel whenever the inteſtine retired into the abdomen. The hernial ſac was much wrinkled, as if, after being diſtended, it had fallen into a collapſed ſtate. I cut off all that part of the omentum which appeared diſeaſed, as well as all that projected from the hernial

ſac.

ſac. That part which appeared ſound, and adhered cloſely to the ſac, I ſuffered to remain, leſt I ſhould wound the ſac; for its irregular wrinkled ſurface made the exciſion difficult.

" The patient recovered very well, but the hernia returned, and a truſs was applied to prevent the inteſtine from deſcending as uſual.

" In this caſe, it ſeems to me highly probable, that the interior ſurface of the omental ſac became the exterior ſurface of the inteſtinal one. Had not the inteſtine retired while I was dividing the hernial ſac, I ſhould have found a double hernia, one omental, and the other inteſtinal."

Theſe are very important caſes, and ſerve to point out to ſurgeons the neceſſity of a minute examination into the nature of the diſeaſe, and of the ſymptoms which follow the operation for the removal of hernia.

OF

OF THE CONTENTS OF THE SAC OF THE CRURAL HERNIA.

THE contents of the crural hernia do not eſſentially differ from thoſe of other herniae; and, therefore, what has been ſtated with regard to the contents of hernia in general applies alſo to this form of diſeaſe.

In inſtances of crural hernia, a ſmall portion of the ileum is moſt frequently found within the tumour; ſometimes only one part of inteſtine has been conſtricted.

But the omentum has not been ſo often diſcovered within ſuch tumours as in umbilical or ſcrotal herniae; theſe have been ſometimes found to contain omentum alone.

What has been ſaid as to the conſequences of ſtrangulation in other herniae applies alſo to crural hernia.

In caſes of crural hernia, the bowels are leſs readily reduced than in other ſpecies of this diſeaſe, on account of the narrowneſs of the neck of the ſac, as is ſeen in fig. 2d of tab. 3d,

and

and in plate 6th ; and alſo on account of the crooked direction of the tumour with reſpect to the abdomen, as already ſtated : and hence alſo they are more frequently ſtrangulated, eſpecially as the crural hernia happens ſuddenly, and moſt frequently occurs after violent muſcular exertion.

Fig. 2d of plate 5th ſhows the effect of inflammation upon a portion of the ileum which was contained within the ſac of a crural hernia.

Upon making an inciſion into the inteſtine, with a view to aſcertain the change which inflammation had produced, its coats were found conſiderably thickened, with a layer of coagulable lymph, nearly one fourth of an inch thick, effuſed on the inſide of the protruded bowel ; and, at one part, the ſtricture was ſo complete, that even a ſmall probe could not be paſſed through it.

The outer portion of the protruded inteſtine adhered, by a layer of coagulable lymph, to the ſac which contained it.

DIAG-

DIAGNOSIS OF CRURAL HERNIA.

On account of the very ſmall ſize of the tumour, it is often very difficult, by an examination of it, by preſſure with the fingers, to diſcover the nature of its contents, as may generally be done in caſes of ſcrotal or umbilical herniae, eſpecially as the tumour, in caſes of crural hernia, has an additional tenſe covering from the tendinous aponeuroſis of the muſcles of the thigh; beſides which, in many inſtances, one or more of the inguinal lymphatic glands are ſituated at the ſide of or over the herniary ſac.

The general or ſympathetic ſymptoms of all kinds of herniae are nearly the ſame; and hence it is only neceſſary to examine with attention the ſymptoms of ſuch local diſeaſes as may counterfeit a crural hernia.

As a crural hernia may be very readily miſtaken for a ſwelling of the inguinal lymphatic glands,

glands, or for the under part of a lumbar abceſs, it becomes more neceſſary to detail alſo the ſymptoms of ſuch caſes.

The lymphatic glands of the groin are often ſwollen in conſequence of lues venerea, ſcrofula, and cancer.

Hernia may be diſtinguiſhed from a venereal bubo by attending to the peculiar feeling of the tumour, the progreſs of the tumour towards ſuppuration, and the general ſymptoms.

The bowels are not affected by a venereal bubo, as by hernia; in the former, the tumour is hard, often knotty; cannot, by preſſure, be made to diſappear, or to become leſs; and is generally ſituated in the uppermoſt cluſter of inguinal lymphatic glands.

Notwithſtanding theſe and other marks of diſtinction, ſurgeons of the greateſt eminence have ſometimes miſtaken hernia for a venereal bubo, or a venereal bubo for a hernia.

Sabatier

Sabatier acknowledges that he miſtook a venereal bubo for a crural hernia *.

Mr Elſe † met with a ſingular caſe of crural hernia, in which the hernial tumour was placed behind a ſwelled lymphatic gland of the groin; which complication of diſeaſe might very readily have deceived a ſurgeon.

The ſubject of this caſe had been a phyſician's patient, in St Thomas's Hoſpital, on account of rheumatic pains, but which his phyſician concluded to be venereal. He had gone out in a coach, and ſaid, that, from the jolting of the coach, a ſwelling had come on in his groin. Mr Elſe directed a poultice to be applied to the tumour.

The perſon died in three days, with all the ſymptoms of ſtrangulated inteſtine. Mr Elſe opened

* Sans doute, qu'on a pris auſſi, quelquefois des bubons veneriens pour des hernies. Cette mepriſe m'eſt arrivè une fois, et je ne crains pas de l'avouer, afin d'attirer ſur ce point l'attention des perſones a qui cet ouvrage eſt deſtiné.

Vid. De la Med. Oper. tom. i. pag. 147.

† Vid. Lond. Med. Obſ. & Inq. vol iv. page 355.

opened the body, and gives the ſubſequent account of the diſſection.

" I procured leave to open the body, and, raiſing the integuments, laid bare the lymphatic gland which I had felt, which was much enlarged and inflamed. I then diſſected Poupart's ligament very clean; and though I raiſed up the edge of the gland all round with my finger, I could diſcover no appearance of a hernial ſac. I then cut into the ſubſtance of the gland, without being able to ſee any thing like a rupture. After this, I made an opening into the cavity of the abdomen, and preſently ſaw that a very ſmall portion of the ileum had deſcended, and was ſtrangulated. The inteſtine above the ſtrangulated part was livid, where I made an inciſion into it, and found that I could paſs a blow-pipe, or my finger, along the inteſtinal canal beyond the ſtrangulated part, and without interruption from it. On diſſecting away the lymphatic gland, I ſaw that a ſmall portion of the inteſtinal tube, about the ſize of a hazle-nut, had deſcended."

A quantity of fat, or a collection of hydatids, on the inner ſide of the groin, may reſemble a herniary tumour in ſome degree.

Of the latter form of diſeaſe, an excellent ſpecimen is preſerved in my father's muſeum, in which a ſac, the ſize of an egg, which contained within it a quantity of hydatids, was removed from the upper and inner portion of the thigh, which might readily be miſtaken for a hernia, as the hydatids contain a watery fluid, have thin and elaſtic coats, which communicate to the ſenſe of touch nearly the ſame kind of ſenſations as a protruded portion of inteſtine, and are contained within a ſac very ſimilar to a hernial ſac

Another caſe, ſomewhat ſimilar, is deſcribed, in Default's Chirurgical Journal, by Mr Manoury, in which a large hydatid lay over the place where the bowels protrude in caſes of inguinal hernia: It had been miſtaken by a ſurgeon for a hernia *.

Lumbar

* Vid. 252, tom. i. The hiſtory of the ſymptoms of this caſe, and the mode of diſtinguiſhing this complaint from hernia,

Lumbar abceſs may be very readily miſtaken for a crural hernia, eſpecially as the purulent matter does not always follow the courſe of the pſoas muſcle.

The lumbar abceſs is diſtinguiſhed from hernia by the previous ſymptoms of inflammation in the ſide, reſembling the ſymptoms of

is given in the following paſſage:—"Preſſant légérement cette tumeur entre les doigts, il y ſentit de la fluctuation: ce ſigne étoit encore équivoque; il a auſſi lieu dans les hernies dont le ſac contient beaucoup de ſérosité: mais une lumiere, placée au côté oppoſé à celui où l'on regardoit cette tumeur, la rendoit tranſparente dans toute ſon étendue, et ſi on la déprimoit avec la main, en la tirant en bas, elle s'éloignoit de l'anneau et laſſoit entre elle et cette partie un vide où l'on pouvoit enfoncer le bout du doigt et reconnoître qu'elle n'étoit formée par aucun prolongement de la cavité du bas-ventre."

An operation was performed by Deſault, who made an opening into the hydatid, and found, in the anterior and upper part of the ſac, a ſmall tumour, "à l'endroit répondant à l'anneau inguinal, une tumeur approchant du volume de la moitié d'une groſſe noix; elle diſparoiſſoit lorsque la malade ceſſoit de crier, étoit de couleur griſâtre, et rentroit par une légere compreſſion: on ne douta pas qu'elle ne fût formée par le péritoine pouſſé avec les inteſtins à travers l'anneau, dans les efforts et les contractions de cet enfant. Cette diſpoſition donne l'explication d'un ſigne que préſentoit cette tumeur, et qui étoit des plus propres à jetter des doutes ſur ſa nature et à induire en erreur, ſavoir ſon augmentation quand la malade touſſoit," etc.

of nephralgia calculoſa, or nephritis ; by pain increaſed on motion : by the ſlow and gradual increaſe of the tumour, and other ſymptoms ; by the fluctuation of the matter, felt on alternate preſſure being made on the loins, and upper and inner part of the thigh ; by examining the tumour in the alternate ſtate of the erect and horizontal poſture ; and by the abſence of ſuch ſymptoms as denote an obſtruction in the bowels.

A crural hernia may be miſtaken for an inguinal hernia.

From what has been already advanced, it is obvious, that the ſex of the patient will aſſiſt us in diſtinguiſhing one kind of hernia from another ; women being ſo much more frequently afflicted with crural hernia than men.

The late Profeſſor Hamilton, of Glaſgow *, ſeems to have thought, that one variety of hernia is very often miſtaken by ſurgeons for another, and gives the ſubſequent catalogue of

* Vid. Edinb. Phil. Tranſ. vol. 4th.

of ſymptoms, by which an inguinal hernia may be diſtinguiſhed from a crural hernia.

" The appearances of the bubonocele, when ſmall, will deceive a practitioner, if he is not on his guard, and make him imagine it a femoral rupture. The marks by which the one may be diſtinguiſhed from the other, though ſituated in the ſame place, are few and ſimple.

" As the faſcia of the thigh joins Poupart's ligament, the femoral hernia is always under the faſcia; it is therefore more compreſſed; it is not looſe; and we cannot ſo well graſp it with the hand; and, inſtead of being rounded on the top, it is more or leſs flattened.

" The bubonocele, again, is only under the ſkin and cellular membrane; is therefore looſer; can be graſped; and is rounded on the top.

" In femoral hernia, the ſwelling begins at the edge of Poupart's ligament, and goes down, and we feel the ring, and the parts above the ligament, uncovered by the hernia. In the

bubonocele of women, it goes over Poupart's ligament, and ſometimes up upon the muſcles over the ring, and extends more to each ſide, along the bending of the thigh, than the other."

PROGNOSIS IN CASES OF CRURAL HERNIA.

THE prognoſis, in caſes of crural hernia, is much leſs favourable than in other varieties of hernia, as, in ſuch caſes, it is generally much more difficult to return the inteſtines into the cavity of the abdomen, than in the ſcrotal or umbilical hernia, on account of the narrowneſs of the neck of the ſac, and from the ſac in crural herniae being ſometimes tilted upwards on the crural arch; thereby rendering the paſſage between the cavity of the herniary ſac, and cavity of the abdomen, very indirect.

Beſides, on account of the ſtraitneſs of the paſſage through which the inteſtines are protruded,

truded, a very ſmall part of the inteſtine only is commonly diſplaced, which is thereby in greater danger of being ſtrangulated, than when the omentum alſo is contained within the herniary ſac.

I ſhall conclude this paper, by making a few obſervations, which may be regarded as coralleries or inductions from the preceding facts.

As the neck of a crural hernia is generally much narrower than that of a bubonocele, there is much greater riſk of inflammation affecting the bowels contained within the herniary tumour in the former, than in the latter caſe; and there will be much greater difficulty, and therefore leſs chance of returning the bowels into the cavity of the abdomen, in a caſe of crural, than in a caſe of inguinal hernia.

In the caſe of a ſtrangulated hernia, it is extremely difficult to name the moment when

the operation ſhould be performed, and when it may prove a cure.

Dr Baillie very juſtly obſerves, that the pulſe is by no means an infallible index of the ſtate of the protruded inteſtine. "The pulſe is ſometimes, in ſuch a caſe, not increaſed in frequency beyond the ſtandard of health, and yet the inflammation of the bowel has been diſcovered afterwards, by the operation, to be very great. This is an important practical obſervation, becauſe it ſhows that the degree of inflammation is not to be judged of from the pulſe, and teaches, that the operation ſhould not be delayed, after the proper efforts for reducing the rupture have failed, becauſe the pulſe may happen to be little, or not at all, accelerated."

Nor can we judge with certainty, from the ſtate of the other ſymptoms, whether the operation will be the means of cure, as theſe are very various, in point of ſeverity, in different conſtitutions.

In moſt caſes, mortification of the bowels comes

comes on in one, two, or three days after the ſtrangulation; but there are a few inſtances upon record, in which the operation has been performed with ſucceſs after four, nay, after five or ſix days from the period of the ſtrangulation.

In general, the difficulty and hazard of performing the operation for crural hernia deter the ſurgeon from having recourſe to his operation in due ſeaſon. In moſt inſtances, that important operation ought to be performed ſoon after the other means of reducing the herniary tumour have been found inefficacious, as the bowels, without much previous pain or inflammation, are often reduced to a ſtate which proves fatal to the patient, by terminating in mortification.

From the annexed plates, we learn, that if the operation be poſtponed until a conſiderable degree of inflammation has affected the herniary ſac, it will often be impracticable to reduce the bowels, as an effuſion of coagulable lymph, which forms a bond of union between

the

the herniary ſac and bowels contained within it, very ſoon ſucceeds the inflammation; or, if the attack of the inflammation be violent, eſpecially in crural hernia, it is very apt to terminate in mortification.

From the above deſcription of the ſtructure of the crural arch, and from the preceding account of the ſituation of the crural hernia, it appears, that Mr Gimbernat's mode of performing the operation for that complaint is not only the ſafeſt, but alſo the moſt certain method of taking off the ſtricture upon the bowels: Hence I ſhall ſubjoin his deſcription of his mode of operating, and ſhall make a few comments upon it.

" The patient being placed, as in the operation for inguinal hernia, and the hernial ſac being laid open, an attempt ſhould be made, if the inteſtine be uninjured, to replace it by the hand.

" For this purpoſe introduce, along the internal ſide of the inteſtines, a canulated or grooved

grooved ſound, with a blunt end, and a channel of ſufficient depth.

" This is to be directed obliquely inwards, till it enter the crural ring; which will be known by the increaſed reſiſtance, as alſo when its point reſts upon the branch of the os pubis. Then ſuſpend the introduction, and keeping the ſound (with your left hand, if you are operating on the right ſide) firmly reſting upon the branch of the os pubis, ſo that its back ſhall be turned towards the inteſtine, and its canal to the ſymphyſis pubis.

" Introduce gently with your other hand, into the groove of the ſound, a biſtoury with a narrow blade and blunt end, till it enters the ring; its entry will be known, as before, by a little increaſe of reſiſtance. Cautiouſly preſs the biſtoury to the end of the canal, and, employing your two hands at once, carry both inſtruments cloſe along the branch to the body of the pubis, drawing them out at the ſame time.

" By

"By this eaſy operation, you will divide the internal edge of the crural arch at its extremity, and, within four or five lines of its duplicature, the remainder continuing firmly attached by the inferior band, or pillar, of which it is the continuation.

"This ſimple inciſion being thus made, without the ſmalleſt danger, the internal border of the arch, which forms the ſtrangulation, will be conſiderably relaxed, and the parts will be reduced with the greateſt eaſe."

How far the advice given in the firſt paragraph of this extract, viz. laying open the ſac, ſhould be followed, admits of doubt.

My father, in his treatiſe upon the burſae mucoſae, has publiſhed the hiſtories of four caſes, in which the bowels were returned into the cavity of the abdomen, without opening the ſac, and, in all of theſe, the patients ſoon got well *; and I know of another inſtance in

* Vid. Appendix.

in which the ſame method of operating was adopted, and with the ſame good ſucceſs. It ſeems ſingular that Mr Gimbernat ſhould have recommended the opening the ſac, before the tendinous ſubſtance is divided, as he ſeems, from a ſucceeding paſſage, to have been fully aware of the bad effect of expoſing the inteſtines to the air: His words are, "This compreſs ſhould extend two inches beyond the future, to prevent the introduction of the air, or of any body capable of occaſioning irritation."

If the operation were performed as ſoon as it ought to be, after the other means of reducing the hernia have been found inefficacious, the contents of the hernial tumour generally may be reduced, without opening the ſac.

Various arguments, which, at firſt ſight, appear plauſible, have been employed by thoſe who recommend the laying open the hernial ſac in all caſes; but, if the reader will conſult the Appendix to this paper, which

contains

contains my father's arguments againſt this practice, he may probably be convinced, that the doing ſo, is not only unneceſſary, but highly dangerous, except in very particular caſes, where the neck of the ſac is unuſually conſtricted.

Mr Gimbernat affirms, that the bladder of urine, when diſtended by urine, or the uterus by its contents, may be injured in his mode of operating; but if the bladder be emptied, the ſmaller inteſtines will ſlip downwards into the place the diſtended bladder of urine pre-occupied, and hence may be injured.

I have ſubjoined an account of the mode of operating in caſes of crural hernia, which has always been recommended and ſhown by my father, in his chirurgical lectures.

" In the femoral hernia, the external inciſion is to be made obliquely, from within, outwards and downwards, beginning the inciſion an inch or ſo above the tendon called ligament

ment of Fallopius, and continuing it to the like diſtance below the ligament.

" We are next to make a ſmall hole, imemdiately below the ligament in the tendinous aponeuroſis, which covers the muſcles on the inner ſide of the thigh, and is connected to the ligament.

" We are then to introduce the point of a ſmall furrowed probe or directory under the ligament; and holding this in the oblique direction upwards, towards the umbilicus, we are cautiouſly and ſlowly to divide, with the ſtraight probe pointed knife, one little bundle of the tendinous fibres after another, uſing the knife as a ſaw, inſtead of entering its point deep within the tendon, and then raiſing its handle, ſo as to make a large ſweep or extenſive inciſion with the edge of the knife.

" I adviſe the edge of the knife to be turned towards the umbilicus; becauſe, if it be turned inwards, towards the ring of the external oblique muſcle, as Le Dran directs, it will very readily cut the ſpermatic chord, or round ligament

ment of the uterus; and, if it is turned outwards, as Mr Sharp adviſes, it may readily cut the epigaſtric artery; but when we turn it towards the umbilicus, it will be directed to the place at which the ſpermatic chord and epigaſtric artery croſs each other, like the ſtrokes of the letter x, and of courſe will be at the greateſt poſſible diſtance from both.

" If, beſides giving the knife this direction, we ſlowly and cautiouſly divide the tendinous ligament, dilating the opening gradually by introducing the finger, I know, not only from the ſituation of parts in the ſound body, but from a conſiderable number of caſes, in which I have aſſiſted in the operation, that the tendinous ligament may be completely divided without cutting the ſpermatic chord, or epigaſtric artery."

Both methods of operating have been ſucceſsfully performed: In the former, there is leſs riſk of wounding the epigaſtric artery, in thoſe inſtances in which there is the uſual diſtribution of arteries; and it is evident, that

that

that method of operating might be performed with ſtill greater ſafety, if the ſurgeon, inſtead of carrying both inſtruments cloſe along the branch of the body of the os pubis, and drawing them out at the ſame time, as Mr Gimbernat directs, divided one part after another with great caution. By following that method, he might even avoid dividing the obturator artery when it ariſes in common with the epigaſtric artery, and runs along the upper and inner ſide of the hernial ſac; but as ſuch is by no means a frequent luſus naturae, the operation of Gimbernat ſhould not, on that account ſolely, be laid aſide.

As an additional argument in favour of Mr Gimbernat's method of operating, I may add, that it is not eſſentially different from that recommended and practiſed by Mr Hey of Leeds.

Future experience muſt determine to which of theſe methods of performing the operation for crural hernia the preference is due.

ADDENDA.

By miſtake, a variety of internal hernia (which is probably more frequent than any other) was not mentioned in its proper place; viz. That in which the bowels enter into the upper aperture, but do not paſs out at the lower and external aperture of the ring of the abdominal muſcles.

I had occaſion lately to ſee an inſtance, in which there were two obturator veins on the ſame ſide. One of theſe accompanied the obturator artery, which aroſe from the external iliac artery, and terminated in the external iliac vein. The other obturator vein terminated in the hypogaſtric vein.

APPENDIX.

EXTRACT *from Dr* MONRO'S *Deſcription of all the* Burſae Mucoſae *of the human Body.*

WITH ſimilar views I have long ventured to propoſe a method of operating in hernia, which I am perſuaded, from a moſt ſucceſsful trial of it in different caſes, as well as from reaſon and analogy, would render this frequent and very neceſſary operation far leſs dangerous than it has hitherto proved in the hands of the moſt experienced and dexterous ſurgeons. And as this is a ſubject of the utmoſt importance, I ſhall ſtate it more fully than is perhaps neceſſary for illuſtrating the chief ſubject of this work.

That I may give a fair repreſentation of the opinion and practice of the preſent moſt eminent ſurgeons, I ſhall quote the following paſſages from the works of one of the lateſt and moſt juſtly celebrated authors in ſurgery, I mean Mr Pott *.

In the firſt place, he tells us (p. 286.) "Theſe are my

* Pott's Works in 4to, 1775.

" principal reaſons for believing that the mere ſtricture " made by the tendon is, in the generality of incarcerated " ruptures, not only a ſufficient, but the primary and in- " deed the ſole cauſe of the ſymptoms, and of all the miſ- " chief."

When, after bleeding, glyſters, &c. preſſure, poſture, and agitation of the patient's body are found to be inſufficient for the reduction of the bowels, recourſe is had to the operation; which is directed to be done in the following manner: " An inciſion muſt be made through the ſkin " and membrana adipoſa, beginning juſt above the place " where the inteſtine paſſes out from the belly, and " continuing it quite down to the lower part of the ſcro- " tum—The place to make the inciſion in the hernial ſac " is about an inch and a half below the ſtricture, and the " opening need not be larger than to admit the end of the " operator's finger—With the knife on the finger the ſac " muſt be divided quite up to the opening in the tendon, " and down to the bottom of the ſcrotum—The ſac being " laid open, the inteſtine generally puſhes out immediate- " ly—This is the time to try whether, by gently drawing " out a little more of the gut, its bulk cannot be ſo re- " duced, as to enable the ſurgeon to return it back into " the belly without dividing the tendon—Yet if it (the " reduction) cannot be very eaſily accompliſhed without " the diviſion of the tendon, it had better not be attempt- " ed—The ſac and ſtricture being divided, the contained

" parts

" parts come into view—In returning the inteſtine, care " ſhould be taken to put in that part firſt which came out " laſt, &c. A conſiderable part of the hernial ſac, if large, " thick, and hard, may very ſafely and properly be re- " moved—An old rupture which was originally congenial " is ſubject to a ſtricture made by the ſac itſelf, indepen- " dent of the abdominal tendon, as well as to that made " by the ſaid tendon. And in this kind of hernia I have " more frequently found adheſions of the parts with each " other, of the inteſtine with the teſticle *." Stitching up the wound is not directed to be done by Mr Pott; and ſome late writers tell us it ought never to be attempted.

After obſerving the ſteps directed to be taken in the operation, let us conſider the degree of danger which attends the operation, and the chief cauſe or cauſes of that danger; by which we ſhall be led to the way of avoiding them.

It is not only true that a great proportion, in general, of thoſe on whom the operation for hernia has been performed, dies; but it muſt be acknowledged, that many die on whom the operation has been done early, before ſymptoms of violent inflammation bordering on mortification have appeared. Nay, Mr Sharp tells us, " That he has " ſeen two or three patients, who were in every reſpect " hale and ſtrong, and who ſubmitted to the operation " merely to get rid of an inconvenience, die a few days

* *See* Mr Pott's Works in 4to, 1775, pages 286, 278, 279, 280, 289, 290, 312.

" after the operation ;" and adds, " that the event, " though very ſurpriſing, ſhould be a leſſon never to re- " commend this method of treating an epiplocele, unleſs " it is attended with inflammation," &c. * The ſame thing has occurred to other eminent ſurgeons †: To which the reader will pleaſe to add what was before obſerved, that if wounds be made into the abdomen of ſound animals, and that a portion of the alimentary canal, as large as that which is often contained in a herniary ſac, be handled and expoſed to the air, the animals frequently die.

That the wound of the tendon or peritonæum contributes little or nothing to the fatal event, appears clearly from the following circumſtances.

In the firſt place, I might with great propriety quote the numerous experiments of Dr Haller and others, who have found that tendons may be wounded without pain or material bad conſequences. But without dwelling on theſe experiments, I have in ſeveral caſes directed the aponeuroſis of the human temporal muſcle to be cut largely in fractures of the cranium ; I have directed an inciſion to be made in the aponeuroſis of the biceps flexor cubiti, for the diſcharge of fetid matter confined by it ; I have ſeen it repeatedly divided in the operation for aneuriſm ; I have in many living animals cut the linea alba and the peritonæum freely ; I have in two caſes of bubonocele cut freely

* *See* Sharp Op. of Surg. 1761, p. 28.

† J. L. Petit Tr. des Mal. Chir. 1774, T. 2. p. 354. &c.

ly the tendon of the ring of the external oblique; and in two cafes of crural hernia, divided with like freedom the tendon of the external oblique, called Ligament of Fallopius. In two of thefe cafes, the peritonæum, which was thickened, and formed a ftricture at the neck of the fac, was divided; yet all thefe incifions were performed without producing any dangerous confequences. In like manner, I have feen the vaginal coat of the teſticle laid open by incifion; but the dreſſings having ſlipped from between the lips of the incifion, theſe grew together without producing ſuch a degree of inflammation as ſeemed neceſſary to effectuate a cure, ſo that there was a neceſſity of tearing them aſunder to introduce dreſſings and to admit the air.

We may therefore couclude, without a doubt, that the danger of the operation of hernia is not owing to the mere diviſion of the tendon or of the peritonæum; but that it depends chiefly, and almoſt ſolely, on the handling of the bowels, and the expoſure of theſe and of the inner ſide of the ſac to the air: Nay, in ſome cafes where the operation of the hernia had proved fatal, I obſerved, in opening the abdomen, that portions of the inteſtine, and likewiſe of the peritonæum, at a diſtance from the herniary ſac, were much inflamed, although the patient had not before the operation complained of pain, except at the place of the rupture.

When we now review the opinion and the practice of ſurgeons, we ſhall perhaps find they are not a little inconſiſtent with each other: for "if the mere ſtricture made by

" the tendon is, in the generality of incarcerated ruptures, " not only a ſufficient, but the primary and indeed the " ſole cauſe of the ſymptoms, and of all the miſchief," why, after the ſkin is divided, do ſurgeons firſt lay open the herniary ſac its whole length, and then cut the tendon; inſtead of merely cutting the ſtricture made by the tendon, without opening the ſac, and then reducing the bowels by preſſure, poſture, and agitation, if the latter ſhould ever be neceſſary?

They pretend indeed to aſſign as reaſons for their practice, that unleſs the ſac is laid open, we cannot know in what ſtate the bowels are; that the inteſtines or omentum are liable to mortification; that collections of fetid water are apt to occur, which, on being puſhed back into the abdomen, might be productive of miſchief; that ſometimes the cauſe of ſtrangulation has been detected either in the entrance to the ſac or among the bowels protruded; or they tell us there are adheſions of the bowels to the inner ſide of the ſac, which ought to be ſeparated.

But ſuch kind of reaſoning, if it has weight, goes farther than is intended; for it ought to prevent ſurgeons from attempting in any caſe, at leaſt from attempting in moſt caſes, the reduction of a hernia.

Yet nothing is more common than to ſee ſurgeons doing every thing in their power to reduce a hernia; and in a few minutes or hours thereafter, inſtead of taking off the ſtricture by cutting the tendon, laying open the herniary ſac, as if the reduction of the bowels would otherwiſe have

been

been unſafe. Surely no reaſon can be given why the reduction of the bowels ſhould be ſafe before the tendon is cut, but unſafe after it is cut.

But inſtead of uſing this kind of *argumentum ad hominem*, as it is called, I would obſerve farther, that it ſo very ſeldom happens that one part of the inteſtine is twiſted around another, or the omentum around the inteſtine, ſo as to ſtrangulate it, that we find only a very few ſuch caſes mentioned in the whole hiſtory of ſurgery. And if even we were to ſuppoſe ſuch a caſe of twiſting or volvulus, if the hernia had not continued ſo long as to produce an accretion of the bowels, the effect of the twiſting and preſſure would probably be taken off by puſhing the bowels back into their natural place in the large cavity of the abdomen. As for the fetid water, which it is ſaid is apt to occur, and that the puſhing it back into the abdomen might be productive of miſchief; from what I have obſerved in the operation of hernia, I am very doubtful whether fetid water is ever produced except where there is mortification. Water is indeed often effuſed in a ſtrangulated hernia; but if there is no mortification, and the hernia be reduced, that water produces no bad ſymptom, but is ſoon abſorbed. If this was not the caſe, the reduction of every hernia which had been for a ſhort time ſtrangulated would be attended with danger.

We are by this obſervation led to conſider the treatment in mortification.

If it be certain that the bowels are mortified, the neceſſity of opening the ſac is evident, that we may give our patient a chance of life, though to be attended with moſt uncomfortable circumſtances: But if there be the ſmalleſt chance that the inflammation may terminate without mortification, it is equally certain that nothing can be ſo pernicious as opening the ſac, and that the bowels ought to be returned without expoſing them to the air.

To make this more evident, I ſhall ſuppoſe that the bowels cannot be reduced by taxis, or that the operation is neceſſary in two hundred patients; and that in one fourth part of the number, the bowels are ſo much ſtrangulated and inflamed, that the termination in a mortification could not by any means be prevented, but that in the other three fourths there is a probable chance that the inflammation may be diſperſed.

If the operation be done in all theſe caſes by opening the ſac, it is probable that of the firſt fifty we may ſave one or two in all; and of the other hundred and fifty, thirty or forty at the utmoſt. Whereas, if we ſuppoſe that in all theſe patients the ſkin and tendon only are divided, and the bowels reduced without opening the ſac, we ſhould indeed loſe all thoſe in whom the mortification was complete: but I am well convinced we ſhould not loſe above ten or twenty at moſt of the other hundred and fifty; and that upon the whole many more lives would be ſaved.

After having reaſoned in this manner upon the ſubject for ſeveral years, I determined to put this method of operating to the trial, and have accordingly directed it to be practiſed in four caſes: in all of which the patient ſeemed to be in great danger, and yet every one of them recovered, without a ſingle bad ſymptom in conſequence of the operation.

In 1770 I was called, along with Mr Alexander Wood, to a caſe of crural hernia in a woman thirty-five years of age, with ſymptoms of ſtrangulation, which had continued three days. Finding it impoſſible to reduce it, I prevailed with Mr Wood to cut the tendon, without opening the ſac, and then to attempt the reduction; which we executed with the utmoſt eaſe.

In 1774, in a caſe of hernia congenita, to which I was called by Mr Clarkſon, ſurgeon at Dalkeith, we found the neck of the ſac, as well as the tendon of the oblique muſcle, extremely conſtricted. After cutting the ſkin and tendon, we, with much difficulty, divided the ſtricture at the neck of the ſac; and, having reduced the bowels, we ſtitched the teguments.

In the end of 1781, I was called by Mr Arrot, ſurgeon in Edinburgh, to a gentleman conſiderably above ſixty years of age, who had been long ſubject to a large hernia, which had been ſtrangulated for ſeveral days. All the common means of cure having proved ineffectual, I pro-

poſed

poſed the inciſion of the tendon, which was very eaſily executed; and, after that, all the bowels were readily returned into the abdomen, except a portion which ſeemed to grow firmly to the inner ſide of the ſac. All the bad ſymptoms diſappeared; and the inciſion, the ſides of which were ſupported by ſtitches, cloſed like a common wound of the teguments.

In 1782, I was called by Mr Simpſon and Mr Calderwood, ſurgeons in Dalkeith, to a caſe of crural hernia, which had been ſtrangulated more than two days, in a woman thirty-five years of age. I directed the tendon to be cut; but ſtill finding reſiſtance from a ſtraitneſs and thickening of the neck of the ſac, we made a ſmall perforation in the peritonæum above the ſtricture, and introducing a probe bent ſemicircularly at its point, cut the neck of the ſac upon it. We then eaſily reduced a ſmall portion of the ileum which was ſtrangulated, and ſtitched the wound accurately. Six days thereafter, I received from Mr Calderwood the following letter.

" Sir,

" I have the pleaſure to inform you, that our patient at Dalhouſie promiſes a favourable recovery. She has had regular and free paſſage twice a-day. The pain in her belly is quite gone. She has had hardly any degree of fever, and the wound diſcharges good matter. I am convinced

convinced the ſtitching, beſide leſſening the danger, will contribute very much to a ſpeedy recovery.

I am, &c.

R. CALDERWOOD."

Dalkeith, Nov. 8. 1782.

This patient, and, ſo far as I know, all the others, are ſtill alive and well.

We are told, in the laſt place, that the ſac ought to be laid open, in order that the ſurgeon may ſeparate any adheſions the bowels may have contracted.

For my own part, I am much inclined to believe, that, in the caſe of adheſion, the ſafeſt and beſt general rule will be, to take off the ſtricture by cutting the tendon, without expoſing the patient to the imminent danger of opening the ſac, to be heightened by the time which muſt be neceſſary for the ſeparation of the adheſions.

But if, inſtead of this, the reader ſhall, upon the authority of Mr Pott, judge it adviſeable in all caſes to attempt the ſeparation of adhering parts *, it will ſurely be time enough to open the ſac, after we have taken off the ſtricture by cutting the tendon, and found that the bowels cannot be reduced by preſſure, becauſe they adhere to the inner ſide of the ſac.

The

* Mr Pott, p. 291. ſays, "I have ſeen the inteſtines very firmly adherent to each other, to the ſac, to the omentum, and to the teſticle; but never in ſuch a ſtate of adheſion as to be incapable of being returned."

The rule of opening the ſac, after dividing the ſkin, ſeems to have been introduced, becauſe ſurgeons ſuppoſed the mere inciſion of the tendinous parts conſtituted a principal part of the danger of the operation; and that they were by no means aware that the danger proceeded chiefly and almoſt entirely from the expoſure of the bowels to the air: And this practice has of late been tranſmitted from one author to another, from a want of due attention and reflection *.

Upon

* The ingenious M. J. L. Petit propoſed, many years ago, to avoid opening the ſac in the operation for certain caſes in ſtrangulated hernia, as appears by a poſthumous work of his, printed at Paris in 1774, in three volumes, De Malad. Chirurg. It has been reported that he afterwards relinquiſhed this method, and "joined keenly with thoſe who had oppoſed it;" but I find no proof of this in his poſthumous work. But if we attend to his reaſoning upon it in tom. ii. p. 356, where he lays down the following propoſition, which not only appears at firſt ſight paradoxical, but which cannot be founded on proper facts, and leads him, in p. 359, to a moſt dangerous and falſe concluſion, "Qu'il eſt bon, pour reuſſir, que les parties aient été quelque tems à la gene," to wit, "Que ces operations faites aux hernies ſans etranglement, n'ont pas des ſuites ſi heureuſes, que celles, qui ſont faites aux hernies qui ſont etranglées;" we will readily perceive, that Mr Petit did not perceive the chief advantages of the operation he propoſed; I mean, that the danger in the common method of operating ariſes chiefly from the expoſure of the bowels to the air; and as this material fact has been little better underſtood by various authors who have lately wrote on the ſubject, that method has been rejected by them on as ſlight foundation as that on which it was propoſed by Mr Petit.

Upon the whole, I have no doubt that many lives may be ſaved by adopting the following rules in the operation for hernia.

If the ſurgeon is not called till the bowels are evidently in a ſtate of mortification, the method recommended by authors is to be followed.

But if he is called in proper time, after trying in vain the ordinary method of reducing the bowels, he ought to operate more early than is commonly done, or before the inflammation can have produced adheſion; in which caſe the operation, after dividing the ſkin, ſhould conſiſt merely in the taking off the ſtricture by cutting the tendon. In this caſe, after the ſkin oppoſite to the ring is cut, the ſtricture is to be taken off by dividing the tendon; after which the bowels may, by gentle preſſure, be returned into the abdomen, without any danger of their ſuffering by being twiſted; and the inflammation which follows the diviſion of the tendon, eſpecially if the ſides of the inciſion in the ſkin be joined by ſtitches, will ſcarcely be greater than where the ſkin alone is divided.

By the by, I would here obſerve, that the diviſion of the tendon in the crural hernia is not attended with that degree of danger which ſome of the lateſt and moſt eminent writers have ſuppoſed *, providing the edge of the knife be turned towards the umbilicus; in which direction, both the epigaſtric artery and ſpermatic cord are at the

* Pott, p. 308.

the greateſt diſtance from it; and that the knife be uſed like a ſaw, dividing cautiouſly with it one tendinous faſciculus after another.

If, after dividing the tendon, the bowels cannot eaſily be returned into the abdomen, there may be room for ſuſpecting that they are confined by a ſtricture of the neck of the ſac, eſpecially in the hernia congenita; which muſt therefore be in the next place removed.

If the herniary ſac under the ſtraitened place of its neck be thin and tranſparent, and that there is little or no reaſon to ſuſpect an adheſion of the bowels with the ſac, the beſt method will be to make a ſmall hole in the ſac below the ſtricture, and then to introduce a ſmall furrowed probe, and to cut cautiouſly upon it: But if the ſac be thick and dark coloured, and that there is likewiſe a ſuſpicion that the bowels may adhere to it, the eaſieſt and ſafeſt manner will be to make the hole in the peritonæum above the ſtricture; then to introduce a common probe, bent near its point into a ſemicircle; and to introduce this, with its point directed downwards, through the ſtricture into the ſac; and, upon the point of it, to make, with great caution, another ſmall hole; after which we may either cut upon the probe, or introduce a furrowed probe, and divide the neck of the ſac *.

After

* In a caſe of crural hernia to which I was called along with Mr Dewar ſurgeon, in 1772, the ſac was thick and opake, with

After this the bowels are to be returned by preſſure upon the ſac, without opening it farther; and the wound in the ſkin is to be ſtitched ſo accurately, by paſſing the ſtitches about the breadth of the finger from each other, as to prevent the acceſs of the air. The wound in the ſkin ought likewiſe to be dreſſed with large pieces of lint ſpread with ſimple cerate, and theſe ſhould be covered with a compreſs.

In the hernia congenita, where the bowels are in the ſame ſac with the teſticle, it is ſtill more neceſſary than in the moſt common kind of hernia to avoid opening the herniary ſac, as the inflammation of the teſticle would add conſiderably to the danger.

In the caſe of hernia congenita, which I treated along with Mr Clarkſon in 1774, the teſticle, which, before the operation, had been in a great meaſure concealed by the bowels deſcending to the bottom of the ſcrotum, was not ſo much inflamed during the cure as to be ſenſibly enlarged.

Before I conclude, I cannot help taking notice of a want of accuracy, in the late writers, as to the manner of diſtinguiſhing the hernia congenita. Mr Pott, p. 311, ſays, "The

with a ſuſpicion of adheſion; for which I propoſed this method; and we executed it with little difficulty. It was likewiſe eaſily done in the operation I attended in 1782 with Mr Simpſon and Mr Calderwood, and very lately in a caſe I attended with Dr Alexander Hamilton and Mr Andrew Wood ſurgeon.

"The appearance of a hernia, in very early infancy, will always make it probable, that it is of this kind; but, in an adult, there is no reaſon for ſuppoſing his rupture to be of this ſort, but his having been afflicted with it from his infancy. There is no external mark or character, whereby it can be certainly diſtinguiſhed from one contained in a common hernial ſac; neither would it be of any material uſe in practice, if there was."

Inſtead of which, I would obſerve, 1. That a hernia that is not congenite may have continued from early infancy. 2. That a congenite hernia may be diſtinguiſhed in an adult by an evident external mark; which is, that the bowels puſh down between the ſac and the fore part and ſides of the teſticle, ſo as often, in a great meaſure, to conceal it; whereas, in the common hernia, every part of the teſticle can be felt diſtinctly. 3. I would allege, that it is of material uſe to make the diſtinction; becauſe, in whatever manner we operate in the hernia congenita, unleſs we take the utmoſt care to exclude the air, there will be a more violent inflammation and greater diſtreſs than in common caſes, becauſe the teſticle will partake of the inflammation.

DESCRIPTION

Fig. 2nd

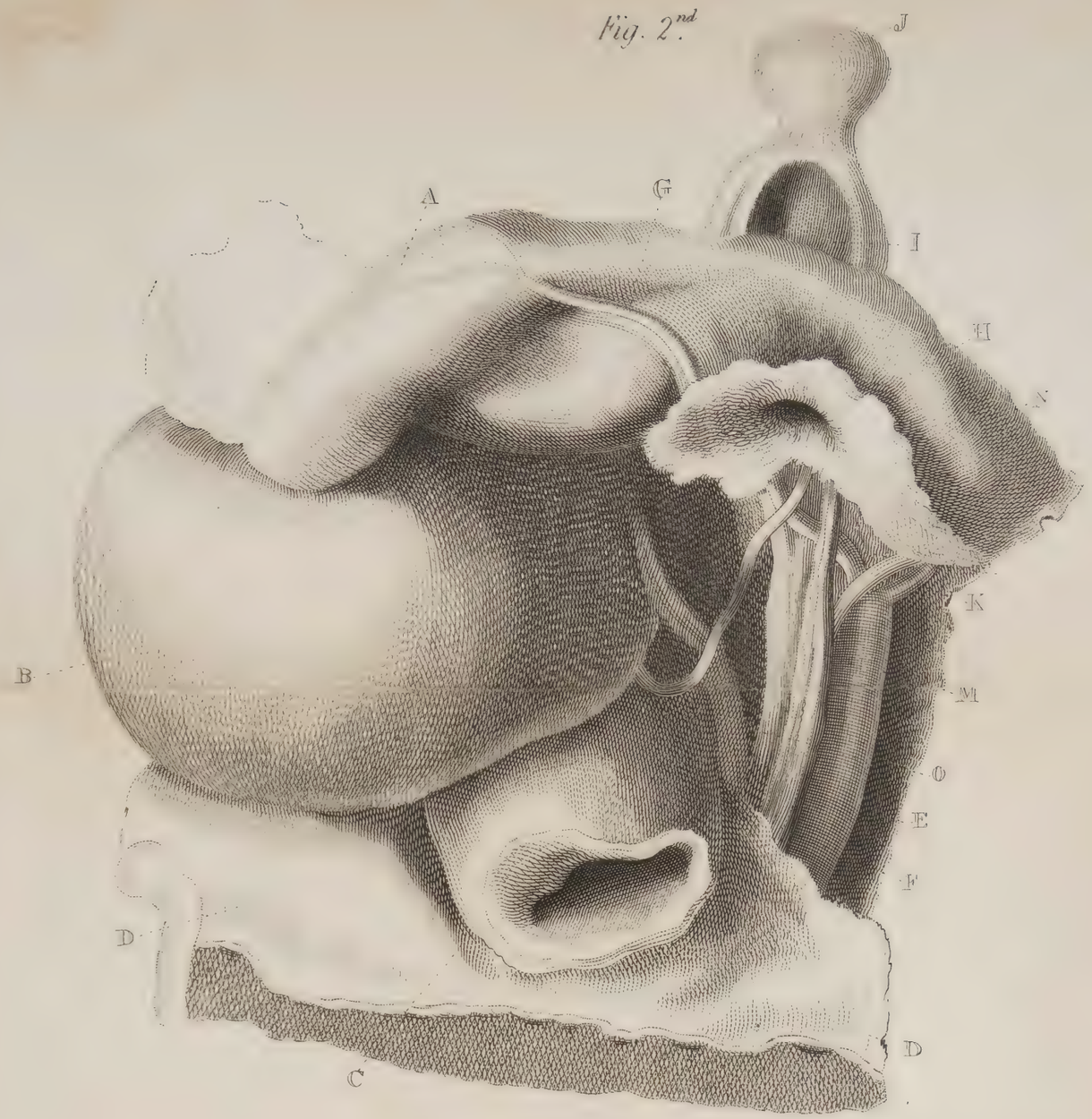
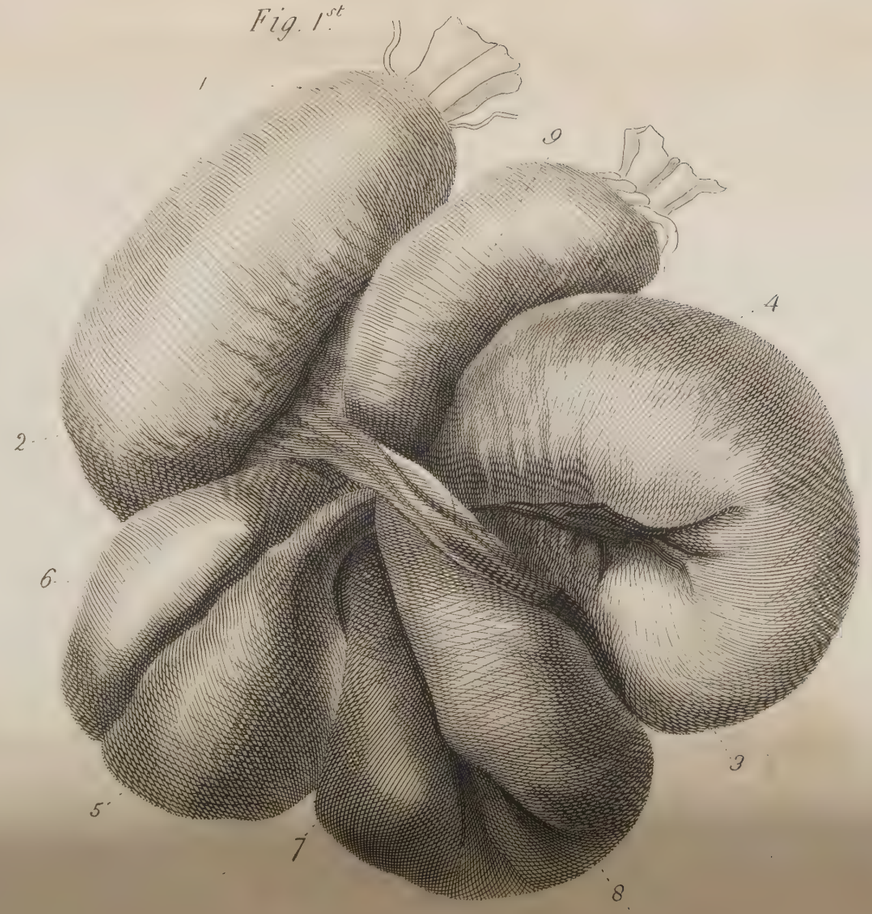


Fig. 1st



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EXPLANATION

OF THE

TABLES.

TAB. I. FIG. I.

REPRESENTS a large praeternatural aperture in the meſentery of a woman, through which a conſiderable portion of the inteſtinum ileum had paſſed and been ſtrangulated. The patient had the uſual ſymptoms of inflammation of the bowels before her death.

The plate repreſents the bowels as diſtended by air; the meſentery is ſeen ſomewhat like a cord; and the inteſtines paſſing through the praeternatural aperture in it.

1. 2. 3. 4. 5. 6. 7. 8. 9. point out the ſucceſſive turns of the inteſtines. This plate is half the ſize of nature.

FIG. II.

Repreſents an inſide view of the pelvis of a boy who had laboured under ſcrotal hernia. The plate is of the ſame ſize as nature.

A, the rectus abdominis turned forwards.

B, the bladder of urine.

C, the rectum.

DD, part of the os ſacrum, covered by membrane.

E, the external iliac artery.

F, the external iliac vein.

G, the epigaſtric artery, ſent off from the external iliac artery; is ſeen paſſing behind the ſpermatic cord and vas deferens, and then along the inner ſide of the neck of herniary ſac H, to the rectus abdominis A.

IJ, a fore ſhortened view of the under part of the herniary ſac and teſticle.

K, the beginning of the circumflex artery.

M, the ſpermatic cord, with its artery and vein injected, paſſing over the epigaſtric artery, and then behind the herniary ſac.

N, the vas deferens paſſing behind the herniary ſac; croſſing the epigaſtric artery G; and then going backwards between the rectum and bladder of urine.

O, the umbilical artery.

Fig. 1.

Fig. 3.

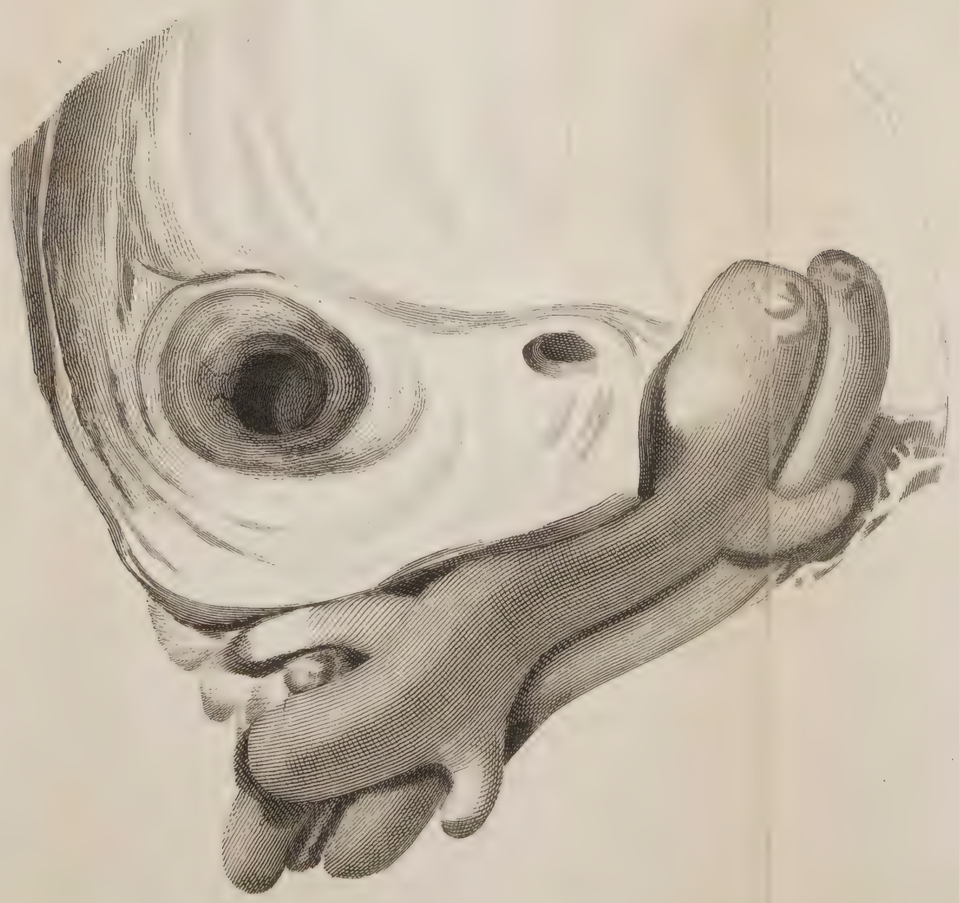
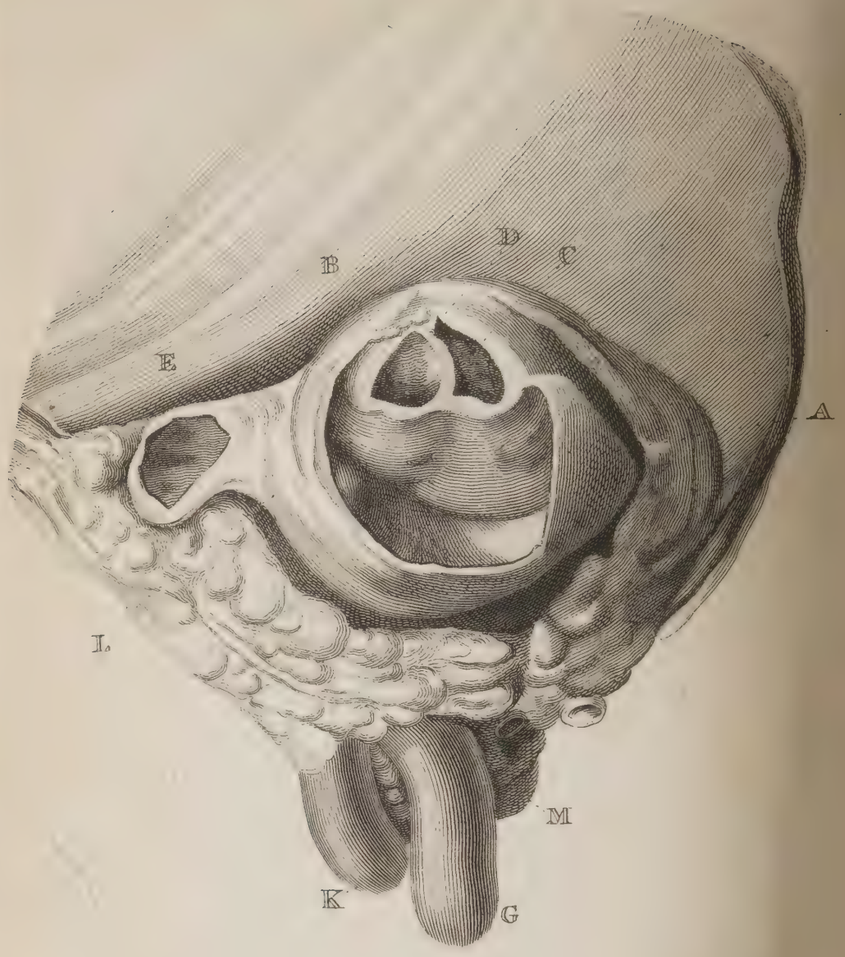


Fig. 2.



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TAB. II. FIG. I.

Repreſents a portion of the ileum, part of which had been ſtrangulated within a herniary ſac.

The marks of the ſtricture are ſeen at AA.

The portion of inteſtine below the ſtricture was of a deep purple colour, and the ſurface of it was covered by a very thin layer of coagulable lymph.

B, a portion of the meſentery.

FIG. II.

Repreſents a ſingular inſtance of plurality of ſacs: in this inſtance there were four herniary ſacs. The largeſt, A, was filled with bloody water. A part of this herniary ſac was removed to ſhow two ſmaller ſacs, B and C, within it: theſe ſeemed to be ſeparated from each other by the ſeptum D, which is very thin poſteriorly.

E, a ſmall ſac at the ſide of the largeſt ſac A.

The ſacs A and E communicate laterally at L; as may be ſeen by the light coming through the opening.

B and C do not communicate.

The ſac B communicates with the ſac A, by a ſmall rounded opening in the poſterior part, which cannot be repreſented in this view of the parts.

Condenſed cellular ſubſtance and fat ſurround the herniary ſacs.

GK, the femoral artery, and its great branch, arteria profunda.

M, the femoral vein.

FIG. III.

Repreſents an inſide view of the ſame preparation.

A portion of the abdominal muſcles covered by the peritoneum A.

B and C, two paſſages through the abdominal muſcles.

The ſmaller aperture does not communicate with any of the ſacs, and does not go very far.

B, the larger aperture communicates only with the ſac C.

EE, the external iliac artery vein.

The figures in this plate repreſent the parts of their natural ſize.

Fig. 1st

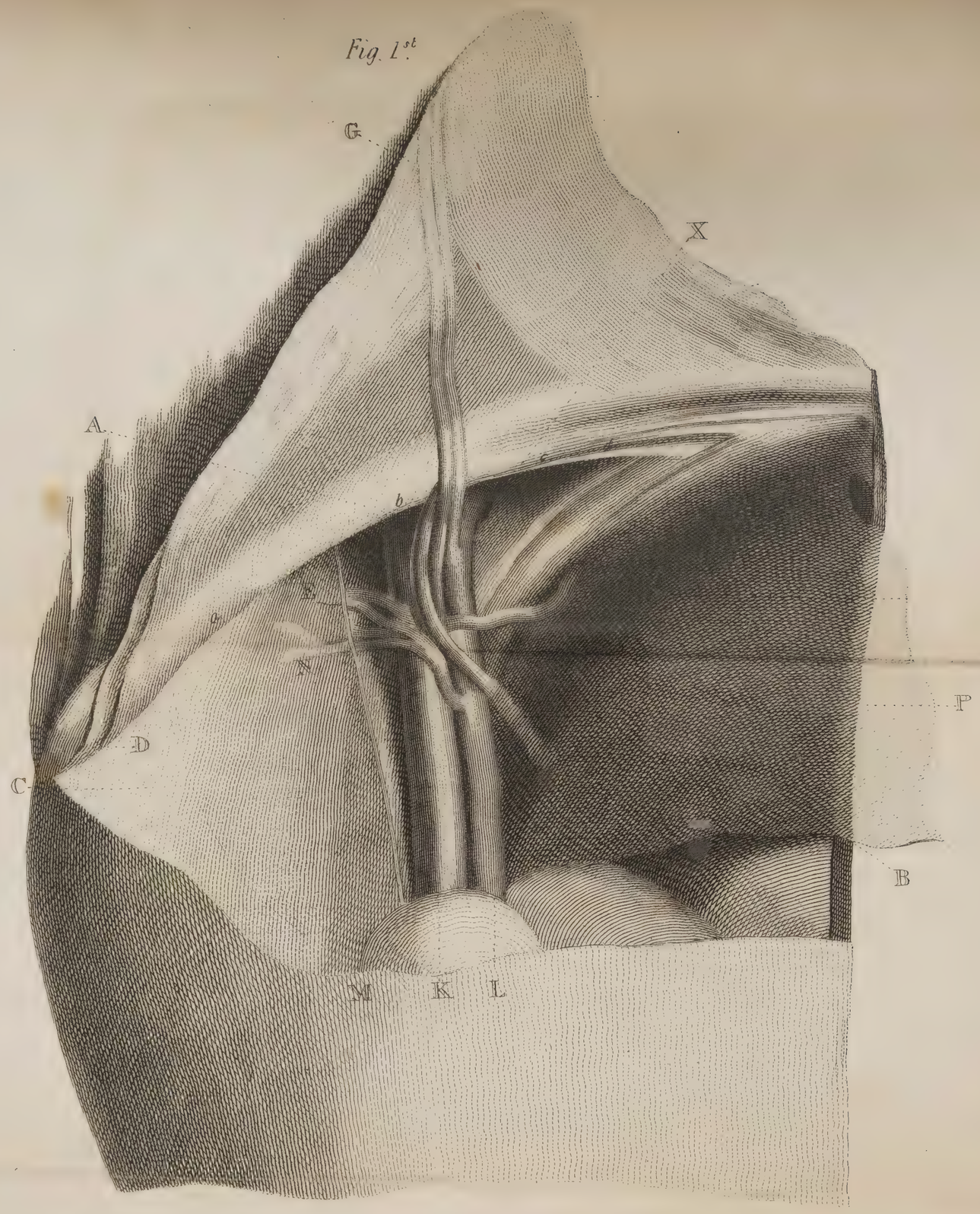
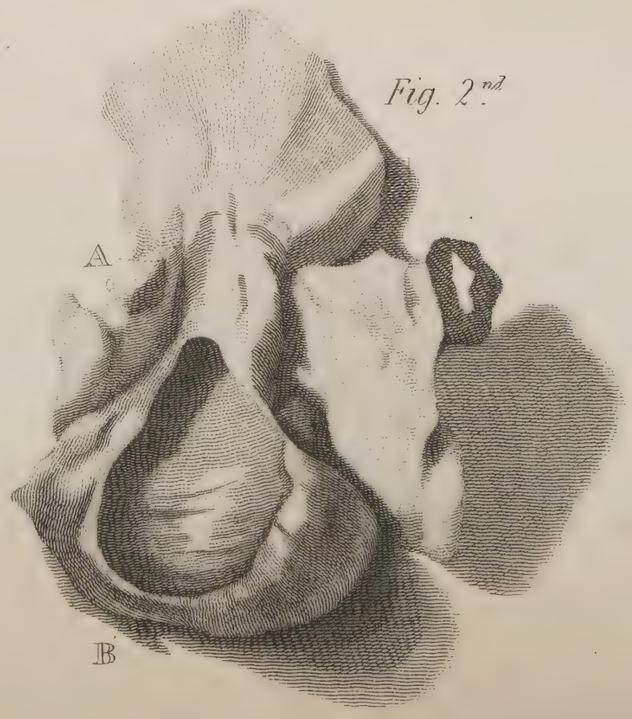


Fig. 2nd



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TAB. III. FIG. I.

Gives an inſide view of the left ſide of the pelvis of a woman.

The reader is ſuppoſed to be looking obliquely down towards the fore part of the pelvis.

The peritoneum is removed, in order to ſhow the parts which were obſcurely ſeen through it.

A, the round ligament of the uterus paſſing in a canal; the poſterior part of which is ſtrengthened by the under portion of the internal edge of the crural arch.

b, c, d, point out the inner ſide of Poupart's ligament, or the internal edge of the crural arch: c and d repreſent the portion divided by Gimbernat in his operation for crural hernia.

CDN, the tendinous aponeuroſis covering the internal iliac muſcle, conſiſting of fibres running longitudinally; others paſs tranſverſely; it is interwoven with the crural arch in ſuch a manner, as is ſeen at A, that herniae cannot happen between the external iliac artery and the ileum, or between b and C.

From the tendinous aponeuroſis covering the iliac muſcle, a membrane paſſes behind the external iliac artery K, and its correſponding vein L. This membrane is inſerted into the edge of the pectineus muſcle, and is attached to the pubis, where it is united with the duplicature of the arch pointed out by the letters c, d, which terminates

in the ſame ſpine of the pubis: a ligament is thus formed, below which the pectineus muſcle is inſerted.

From the crural arch, there ariſes an aponeurotic ſheath: this is the inner ſide of the uppermoſt part of the origin of the faſcia lata of the thigh: this forms the anterior part of the ſheath, which encloſes part of the external iliac blood-veſſels.

The iliac blood-veſſels K and L, and a few lymphatic glands, enter into this ſheath.

One of the crural nerves is ſeen paſſing on the outer ſide of the external iliac artery K.

The epigaſtric artery G is ſent off from the external iliac artery K, before it enters the ſheath; and, with its correſponding vein, paſſes obliquely inwards, on the inner ſide of the round ligament of the uterus A. The obturator artery is ſeen paſſing inwards to the foramen obturatorium: in this inſtance, it ariſes from the ſame part of the external iliac artery, as the epigaſtric artery.

The circumflex artery E paſſes outwards.

X, an aperture on the inner ſide of the external iliac vein L, which is, in ſome ſubjects, filled up by a ſmall lymphatic gland; through this the bowels protrude, and form a crural hernia.

The external iliac blood-veſſels K and L fill up the principal part of the orifice of the ſheath: the round ligament of the uterus A ſhuts up a little of the external ſide of it.

The epigaſtric artery and vein cover its anterior and internal part, on their way to the rectus muſcle of the abdomen.

RRR, part of the external oblique muſcle, and rectus muſcle of the abdomen.

The parts repreſented in this table are reduced to two thirds of their natural diameter.

FIG. II.

Repreſents a ſac of a crural hernia.

It adhered to the neighbouring fat and cellular ſubſtance: hence it appears conſiderably thicker in ſome places than others.

A, its narrow neck.

B, the cavity of the ſac perfectly ſmooth when it was firſt opened; but is now a little corrugated, from having been preſerved for a long time in ſpirits.

This figure is of the natural ſize.

Fig 1st

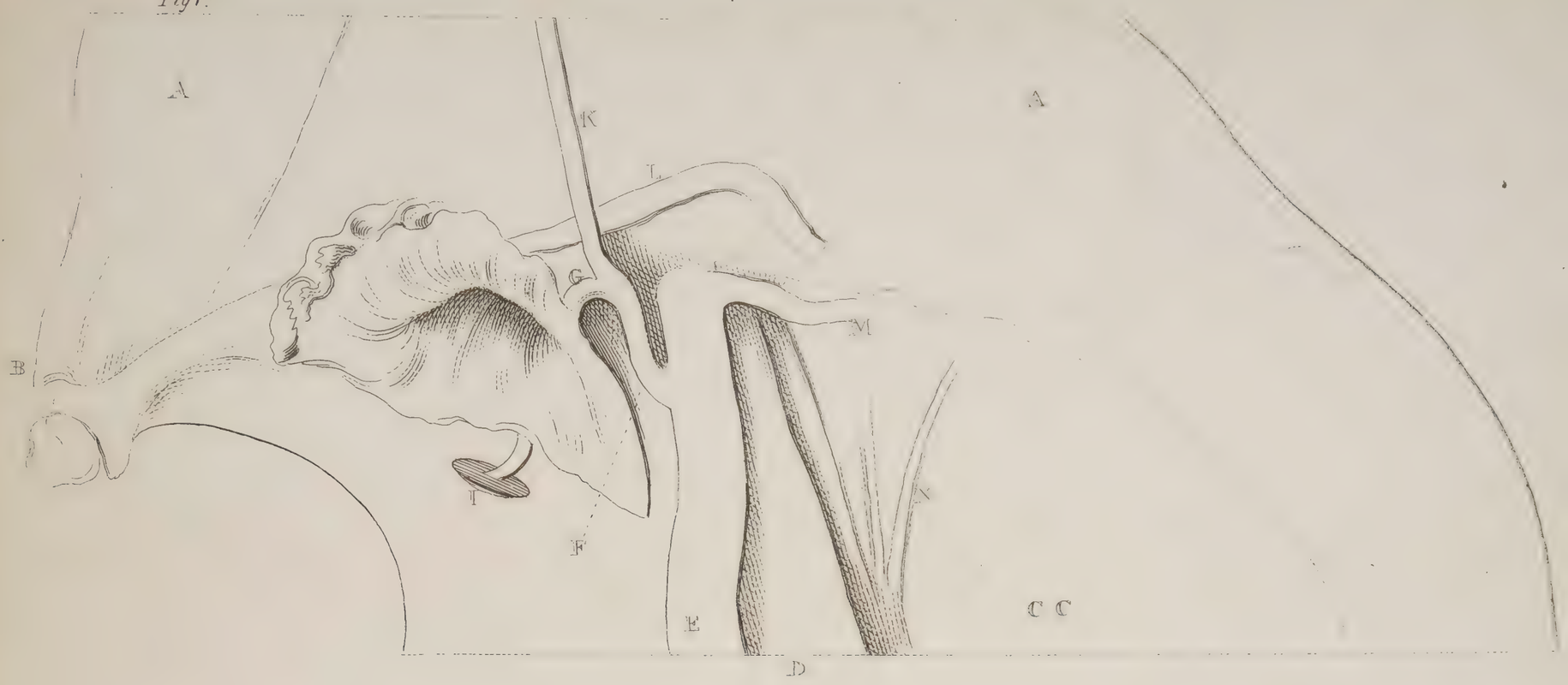

Fig. 2nd

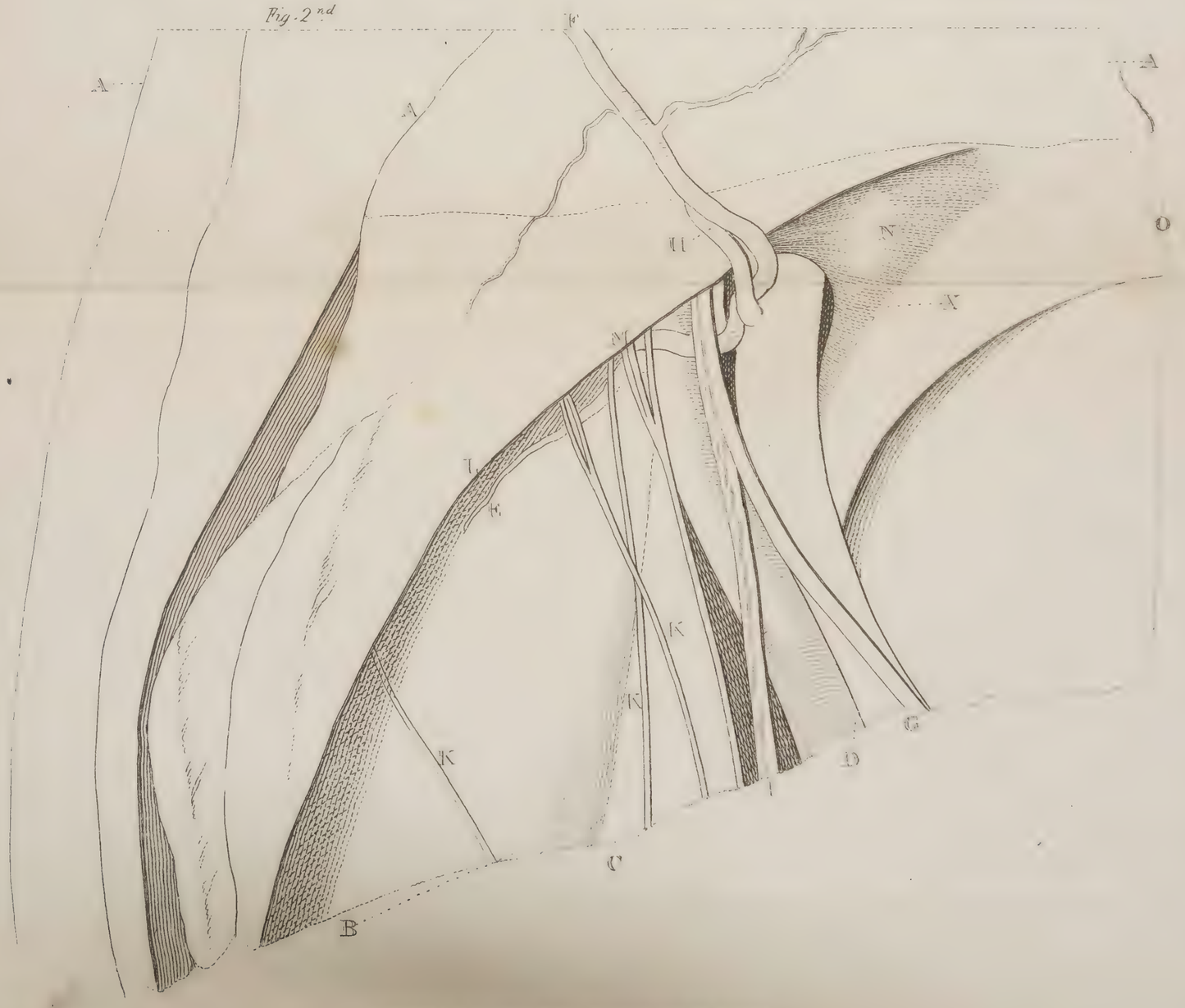

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PLATE IV. FIG. I.

Gives an inſide view of the right ſide of the pelvis of a woman, who died in conſequence of crural hernia. The abdominal muſcles AA were turned forwards.

B, the under part of the rectus abdominis.

CC, A part of the iliacus internus muſcle.

D, a part of the pſoas muſcle.

E, the external iliac artery.

In this caſe, there was a luſus naturae with reſpect to the origin of the obturator artery.

F, a trunk common to the obturator and epigaſtric arteries.

G, the obturator artery paſſing behind and on the outer ſide of the neck of herniary ſac, to paſs through the foramen obturatorium I.

K, the epigaſtric artery paſſing on the outer ſide of the herniary ſac, and croſſing the round ligament of the uterus L, on its inner ſide.

M, the circumflex artery paſſing outwards, and towards the os ileum.

N, a ſmall nerve, derived from the lumbar nerves, paſſing along the iliacus internus muſcle.

In this inſtance, the parts are nearly of their natural ſize.

FIG. II.

Gives an inſide view of the left ſide of the pelvis of the male.

The parts in the plate are repreſented of their natural ſize.

AAA, point out the abdominal muſcles turned forwards and downwards.

B, a portion of the iliacus internus muſcle.

C, a portion of the pſoas magnus muſcle.

D, the external iliac artery.

E, the circumflex artery.

F, the epigaſtric artery.

G, the external iliac vein.

H, the epigaſtric vein.

I, the ſpermatic cord.

G, vas deferens.

KKK, nerves from the lumbar plexus.

LMN, the internal edge of the crural arch.

That part, marked N, is much broader than in the female pelvis.

The aperture X on the internal ſide of the external iliac vein is of a different ſhape and ſize from that of the female pelvis.

O, the creſt of the pubis.

Fig. 1st

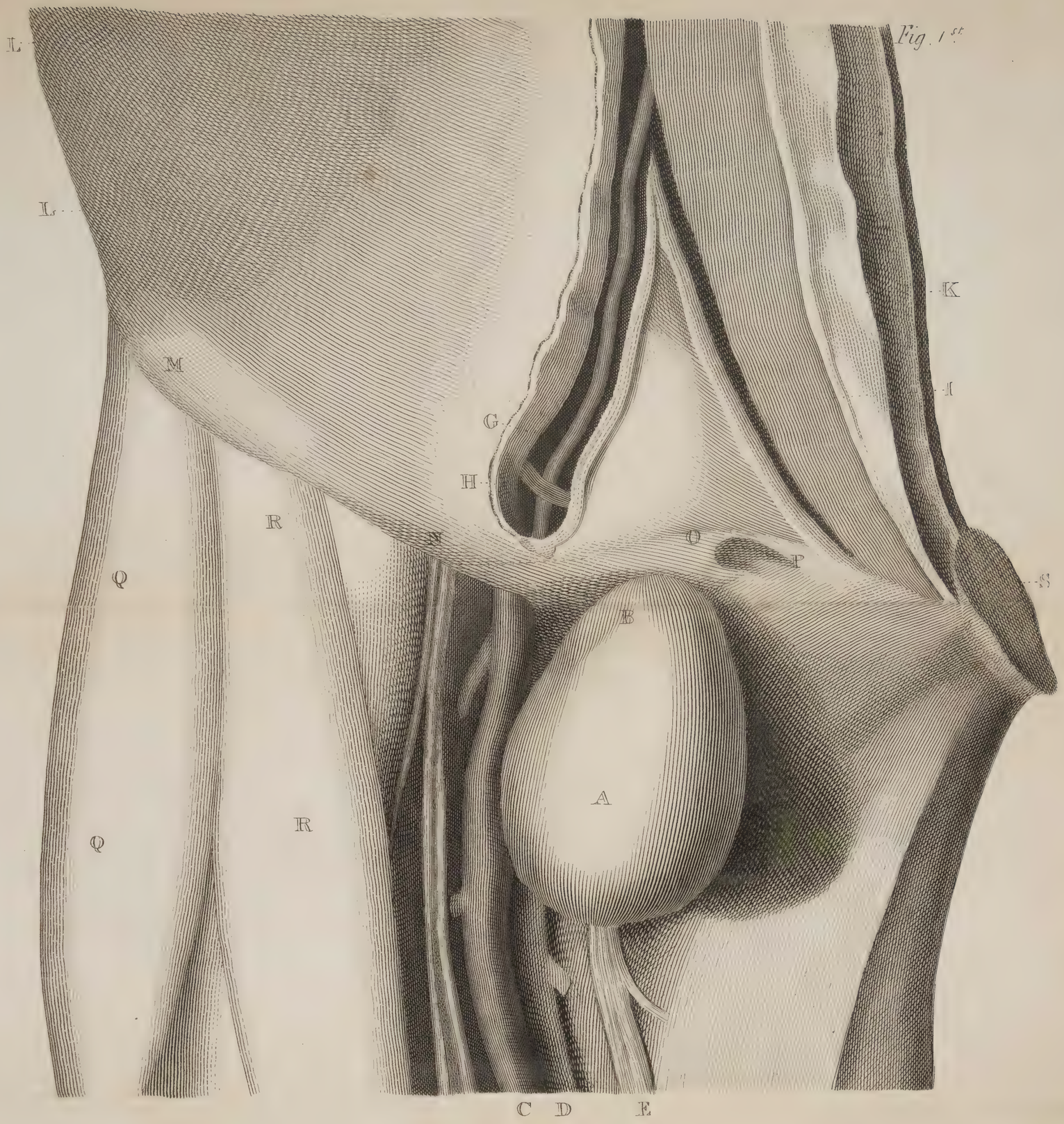
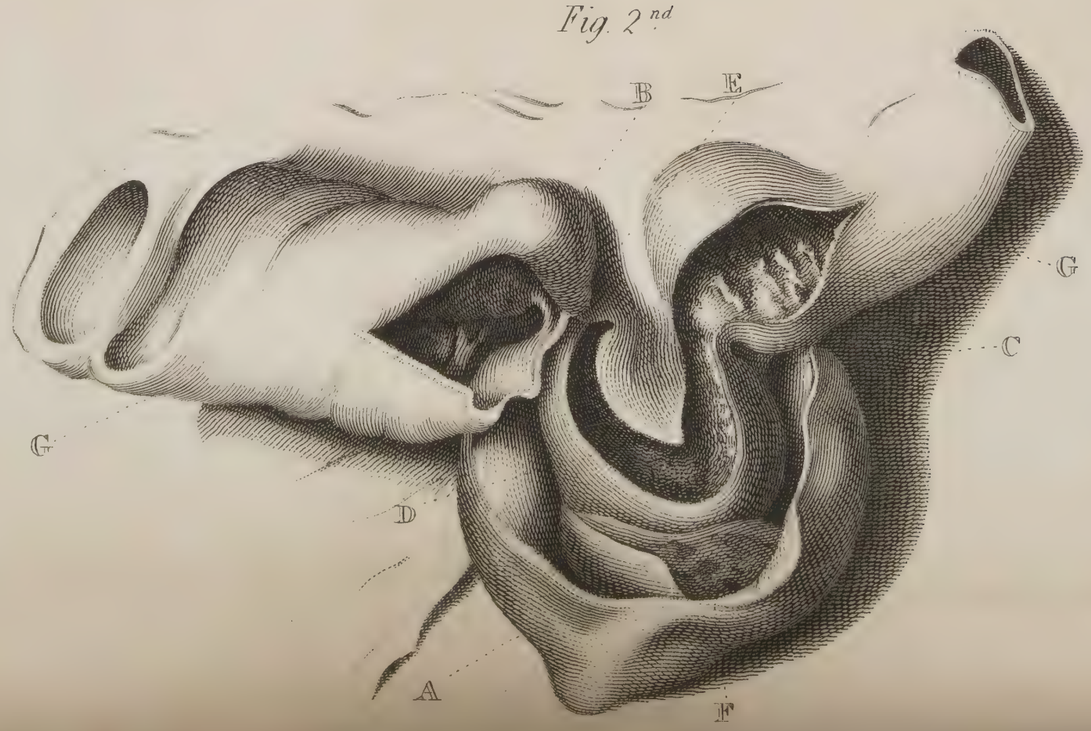


Fig. 2nd



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TAB. V. FIG. I.

Repreſents a front view of the relative ſituation of the crural herniary tumour with reſpect to the neighbouring blood-veſſels and nerves, on the right ſide of the body.

The parts are repreſented of their natural ſize: it was taken from the ſame woman as fig. 1ſt of plate 4th.

A, the herniary tumour.

B, the neck of the tumour.

C, the femoral artery. The anterior crural nerves are ſeen on the outer ſide of the artery.

D, femoral vein.

E, the vena ſaphena.

A portion of the abdominal muſcles was cut out, in order to ſhow the true ſituation and courſe of the epigaſtric artery G.

H, round ligament of the uterus croſſing the epigaſtric artery.

I, the under part of the rectus abdominis.

K, tendinous membrane turned back, which covered the rectus abdominis.

MNO, the under part of the tendon of the oblique muſcle, called crural arch.

FIG. II.

Repreſents a fore view of a portion of the ileum contained within a herniary ſac of a crural hernia.

The ſac A adhered to the neighbouring fat; and therefore appears uneven on its ſurface, and much thicker in ſome places than in others.

The neck of the ſac was narrower than any other portion of it. The engraving repreſents the ſac after it was opened; in conſequence of which, the oppoſite ſides of it have receded to a conſiderable diſtance from each other.

The protruded portion of inteſtine was fixed to the bottom of the herniary ſac AA, by means of a layer of coagulable lymph F.

The protruded portion of inteſtine had dragged down along with it a portion of the meſentery B.

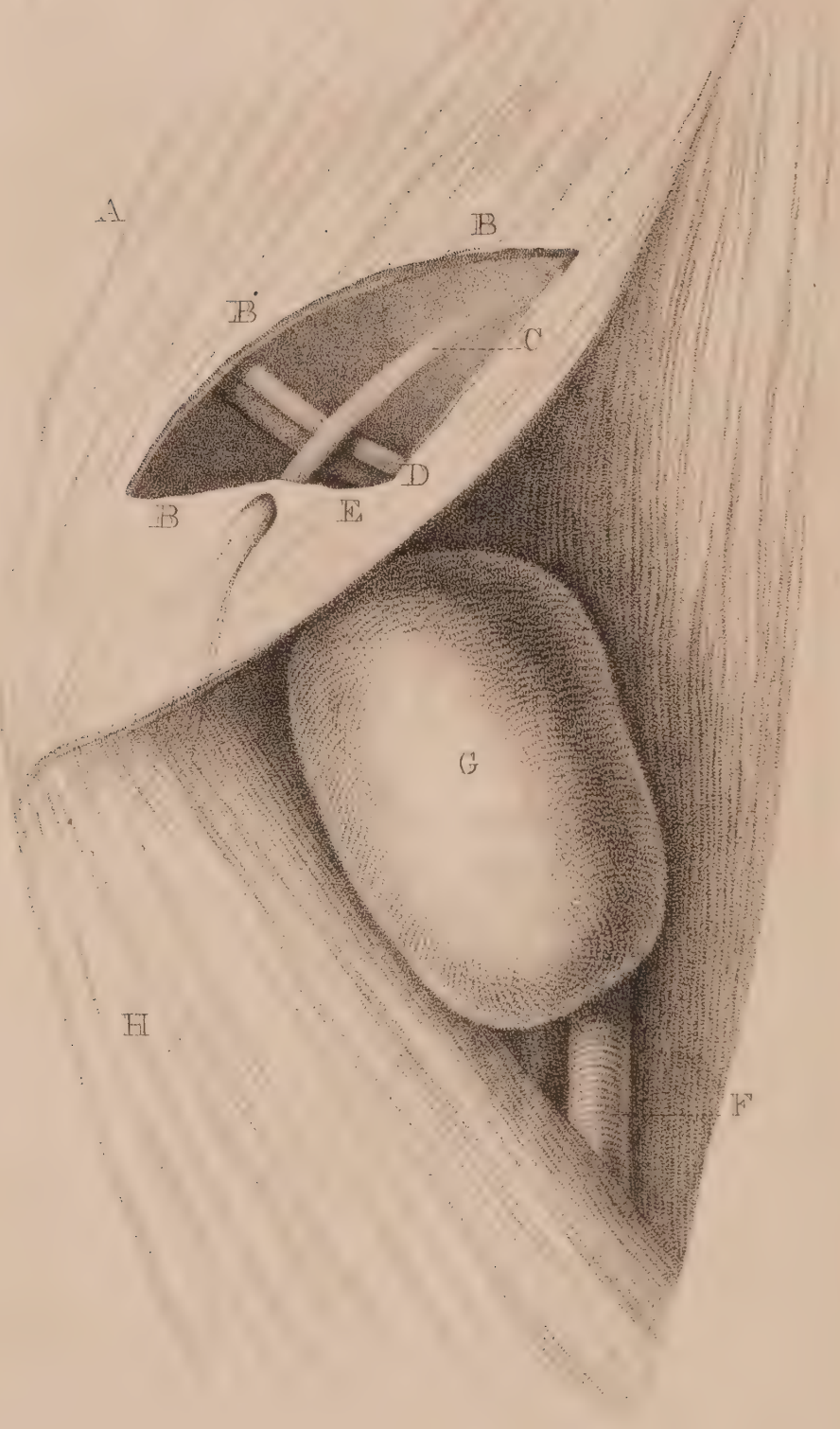
The cavity of the protruded portion of inteſtine was nearly filled by coagulable lymph, except at that part of it repreſented by the letter C.

At the letter E, there was ſo complete an obſtruction, that not even a ſmall probe could be paſſed from the upper to the under part of the ſtrangulated inteſtine.

F, a layer of coagulable lymph uniting the protruded portion of bowel to the herniary ſac.

GG point out the appearance of the inteſtine on each ſide of the protruded portion of inteſtine.

Plate VI.



TAB. VI.

Gives a view of the ſituation and ſize of a crural hernia on the left ſide of the body of a woman.

A portion of the abdominal muſcles was cut out, in order to ſhow the relative ſituation of the epigaſtric artery, and vein, and round ligament of the uterus, with reſpect to the tumour.

A, the abdominal muſcles.

BBB, point out the portion of abdominal muſcles which was cut out.

C, the round ligament of the uterus.

D, the epigaſtric artery.

E, the epigaſtric vein.

F, the femoral artery.

G, the herniary ſac placed on the inner ſide of the artery, and conſiderably flattened from the preſſure of the tendinous aponeuroſis of the muſcles of the thigh.

Plate VII.

PLATE VII.

Shows an example of what may be called internal hernia. In this inſtance, a proceſſus caecus, denoted by the letters AB, paſſed around, and ſtrangulated a portion of inteſtine, marked by the letters DDD.

The patient died of ileus.

The ligament C unites this unuſual proceſs to the meſentery.

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